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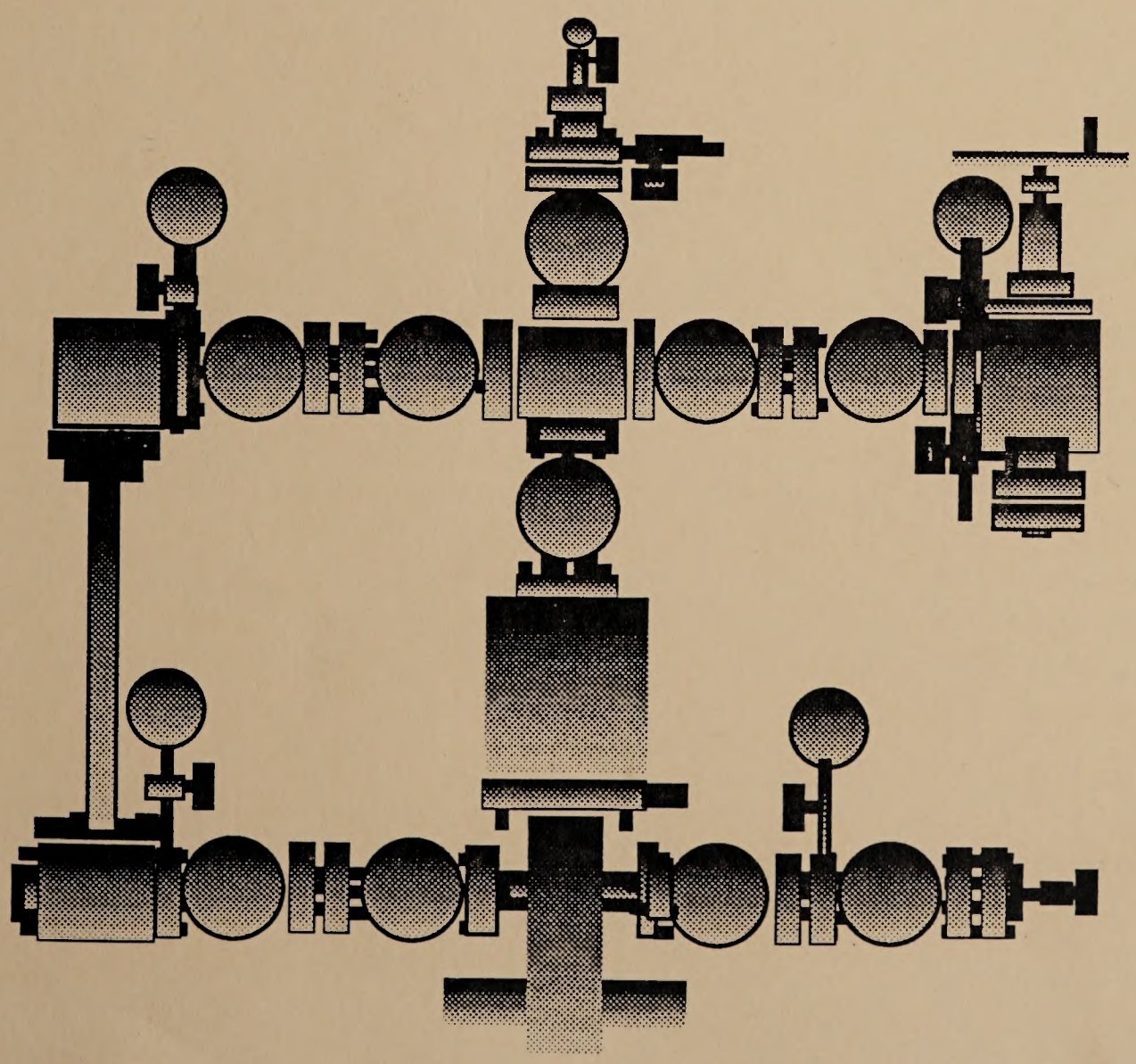
May 1992

UNION PACIFIC RESOURCES COMPANY

WAHSATCH SOUR GAS GATHERING SYSTEM
(Previously Cave Creek)

PROJECT UPDATE



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This Project Update was prepared by Bear West Company, a planning and environmental consulting firm, in cooperation with Union Pacific Resources Company and with the guidance, participation and independent evaluation of the Bureau of Land Management (BLM). The BLM is in agreement with the findings of the analysis and approves and takes responsibility for the scope and content of this document.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Kemmerer Resource Area
312 Highway 189 North
Kemmerer, Wyoming 83101

TAKE PRIDE IN AMERICA

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W-78405
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MAY 2 2 1992

Dear Reader:

This serves as notice of the Bureau of Land Management's (BLM) intention to implement a realty action. The action is to transfer (reassign) the existing Amoco Production Company right-of-way grant, issued in 1984 to Amoco for their Cave Creek Sour Gas Gathering System, to Union Pacific Resources Company (UPRC).

For your information and review, enclosed is a Project Update report on the ***Cave Creek Sour Gas Gathering System,*** now called the ***Wahsatch Sour Gas Gathering System (WGS) by UPRC.*** The WGS will transport sour gas from wells in northern Summit County, Utah and southwestern Uinta County, Wyoming to the Whitney Canyon Processing Plant north of Evanston, Wyoming.

This pipeline gathering system was originally proposed by Amoco Production Company and analyzed for environmental impact by BLM in the *Cave Creek Sour Gas Gathering System Environmental Assessment* (EA) in 1983-84. A Decision Record (DR) was issued by BLM approving the proposal, and a right-of-way (ROW) grant was issued in 1984 to Amoco for construction across federal lands. The project, however, was never implemented by Amoco due to processing capacity limitations at the Whitney Canyon Plant.

In 1991 Union Pacific Resources (UPRC) acquired the project from Amoco, updated the design, and has applied to the BLM for transfer of the Amoco ROW grant to UPRC. UPRC intends to initiate construction of the pipeline in late spring of 1993 and start-up production later that year.

BLM's responsibility in this regard is to carefully reexamine the environmental assessment and decision record prepared for the Amoco Cave Creek project before proceeding with reassignment. The purpose of reexamination is to determine whether there exist significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

The Rock Springs and Salt Lake Districts of the BLM have conducted a review of UPRC's proposal and carefully reexamined the EA and DR originally prepared for the Amoco Cave Creek proposal in relation to UPRC's proposal. We find that there are no new circumstances or relevant environmental

concerns with UPRC's proposal not already addressed in the Cave Creek EA. We find that the UPRC proposal, for reasons explained in detail in the enclosed ***Project Update***, fully conforms with the original Cave Creek EA and DR, as well as the Rock Springs District Kemmerer Resource Management Plan completed in April 1986, and the Salt Lake District Randolph Management Framework Plan completed in June 1980.

BLM therefore concludes that further environmental analysis is unnecessary and that transfer of the Amoco ROW grant to UPRC is appropriate and acceptable. Implementation by UPRC would be contingent upon compliance with the terms and conditions of the ROW grant. The ROW grant terms and conditions as appended to the Amoco grant in 1984 are listed in Appendix M of the Project Update.

UPRC proposes to hold meetings and closely coordinate and cooperate with federal, state, and local regulatory authorities and the public in implementing the project and in identifying and addressing new issues and concerns. Public meetings will be announced in the local media as to date, time, and place. Copies of the 1984 Cave Creek Sour Gas Gathering System EA and DR are available upon request from the BLM office in Rock Springs (307-382-5350).

The public is welcome to submit any comments on the ***Wahsatch Sour Gas Gathering System*** Project Update. In order for your comments to be given consideration prior to the ROW transfer and to allow for timely response, all comments should be received by June 24, 1992. Please address your comments to:

Bill McMahan, Project Manager
Bureau of Land Management
P.O. Box 1869
Rock Springs, Wyoming 82902-1869

Sincerely,

Darrel Short
Area Manager
Kemmerer Resource Area

Leon Berggren
Area Manager
Bear River Resource Area

Enclosure

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UNION PACIFIC RESOURCES COMPANY
WAHSATCH SOUR GAS GATHERING SYSTEM
(Previously Cave Creek)

PROJECT UPDATE

U.S. Department of the Interior
Bureau of Land Management

Rock Springs District
Kemmerer Resource Area
Kemmerer, Wyoming

and

Salt Lake District
Bear River Resource Area
Salt Lake City, Utah

May 1992

SUMMARY

WAHSATCH SOUR GAS GATHERING SYSTEM (PREVIOUSLY CAVE CREEK) PROJECT UPDATE

Union Pacific Resources Company proposes to construct, develop, own, and operate the Wahsatch Gathering System in Uinta County, Wyoming and Summit and Rich Counties, Utah. The project is a 40.4 mile long gathering system pipeline network which would transport sour gas from seven shut-in wells in southwestern Uinta County and one in northern Summit County to the Whitney Canyon Processing Plant north of Evanston, Wyoming. The gas would then be processed and delivered to interstate pipelines and gas markets.

The proposal was originally advanced by Amoco Production Company and was the subject of an environmental assessment (EA) entitled "Cave Creek Sour Gas Gathering System." The EA was conducted in 1983-84 under the direction of the Bureau of Land Management (BLM). Based on findings of that EA, the BLM granted a right-of-way for gathering system construction across federal lands. That right-of-way remains intact. However, construction of the system was deferred due to insufficient processing capacity at the Whitney Canyon Plant. Today, processing capacity exists to accommodate production from the Wahsatch Gathering System. In 1991 Union Pacific Resources acquired the project, updated the project, and intends to initiate construction in late spring of 1993 with start-up late that year.

Project circumstances are unique for two reasons: 1) the BLM and several other jurisdictions approved the project in 1984; and, 2) the system will produce and transport lethal concentrations of H_2S (sour) gas in close proximity to the environs of Evanston. UPRC and the BLM are fully cognizant of these factors and have, therefore, carefully reviewed the project proposal. The project has been modified to incorporate current regulatory and industry construction and operation requirements. The design, materials, and operations components combine today's scientific and technological knowledge to assure system integrity and public and worker safety. UPRC will closely cooperate with federal, state, and local regulatory authorities and the public in implementing the project proposal and in identifying and addressing new issues and concerns.

Gas production would occur from the Phosphoria and Weber formations in Summit County's Cave Creek Field and Uinta County's Yellow Creek Deep Field. Six of the shut-in wells would initially be recompleted, production tested, and be produced. Production from

the other two wells would not commence until later in the projected 20 year life of the gathering system. For each of the wells, existing wellheads would be replaced with new H_2S resistant components. The wellsite production facilities would include piping, a heater, storage and pump skids for corrosion chemical and methanol, and an emergency flare stack. Ambient air monitors to detect H_2S gas would be located at each wellsite. The wellsite locations would be fenced and secured with a locked gate. Automation and telemetry equipment would be located within the secured area.

The pipeline system includes the sour gas pipeline, a parallel fuel gas supply line, 27 automatic emergency shut down (ESD) valve locations, and nine heater locations. The pipe design, size, thickness, coatings, and operational plans are specifically designed for sour gas multiphase (both liquids and gas) conditions. The projected initial peak production capacity of the system is 64 MMcfd. The pipeline route is nearly identical to that approved by the BLM in 1984, with refinements in the alignment to address issues and/or incorporate new project features. The route was selected in 1984 as the safest approach for delivery of this sour gas to the Whitney Canyon Process Plant. A 100 foot temporary right-of-way for construction and a 50 foot permanent right-of-way for the life of the system is requested. Pipeline construction would occur during periods to avoid seasonally sensitive wildlife and wildlife habitat and under stipulations for construction, reclamation, and resource protection as provided in the 1984 EA, current Resource Management Plans, the BLM right-of-way grant, and as may otherwise be required by regulatory authorities. The pipeline route, wells and facilities would be located on lands of mixed ownership including federal, Utah and Wyoming state, and privately-owned lands.

The Wahsatch Delivery Facility would be constructed at the existing Whitney Canyon Processing Plant to receive gas transported by the gathering system, separate gas and liquids, and meter production of gas stream components. This facility would include a slug catcher to receive fluids cleared from the pipeline through periodic pigging. A heater, an emergency flare stack, and metering facilities would also be part of this facility.

Heaters would be located at each well, the delivery facility, and at nine locations along the gathering system line, a total of 18 heaters. The purpose of the heaters is to maintain a minimum gas stream temperature of 95 degrees Fahrenheit in order to prevent formation of hydrates in the system. Heaters would be fueled by sweet gas from the Whitney Canyon Plant and have low NOx burners to minimize air emissions of nitrogen oxides.

The Wahsatch Flare Site, located on private land in Utah approximately eight miles southwest of Evanston and 3.4 miles southwest of the Yellow Creek Deep Field, will be used for production testing of five wells and be maintained for flaring in the unlikely event of an

emergency. This flare site and pipeline system was originally used to conduct production testing from the Yellow Creek Deep wells. The flare system and facilities will be recommissioned and a new flare stack installed. Both the Wahsatch Flare and the Wahsatch Delivery Facility flare would have the capability of depressurizing the pipeline system within one hour.

Federal and state regulations identify uniform requirements and minimum standards for conducting operations involving oil or gas resources that contain hydrogen sulfide. The presence of H_2S in the gas handled by the gathering system requires special design considerations to ensure the safety of the public and the operator. Since the production wells and processing plant locations are fixed, the proximity to other existing area uses cannot be avoided. It is, therefore, necessary to fully understand the safety aspects of the project and the potential risks to the public and to personnel. UPRC commissioned air dispersion modeling, risk analysis, and hazardous operations studies utilizing the latest methodology to assess and fully understand the safety aspects of the project. On the basis of these studies, UPRC has refined the system design to include proven control technology and materials and practices for an H_2S environment.

Air dispersion and risk analysis studies were performed to assess the potential risks associated with a gas leak or rupture in the system. The methodology considered several combinations of release and weather conditions, including the worst possible release of gas under the worst weather and wind conditions. The studies show that the annual risk of a fatality due to a release of gas from the system is very low - well within the range normally considered acceptable for involuntary risk according to criteria used by various international agencies and regulatory bodies. For instance, the occupied structure experiencing the greatest risk associated with the pipeline/well system is 1,000 feet north of the Bradbury well. At this location, the risk of an early fatality from a well blow out or line rupture is about one chance in 100,000,000 per year.

UPRC included design features in the project to protect public and worker safety. Pipe, valves, wellheads, and other materials were selected specifically for use in this H_2S environment. Construction procedures and depth of the pipeline (at least six feet below ground) were designed specifically to assure system integrity and avoid unintentional pipeline damage. Extensive corrosion prevention measures and corrosion monitoring devices and procedures are included. Ambient air monitors to detect H_2S gas would be located at each above ground installation throughout the system. The entire system would be constantly monitored for leaks or changes in system pressure with integration of leak or operating parameter measuring devices into a comprehensive control system design to respond to a problem within one minute and close emergency valves within 20 seconds of activation. The

system includes redundant and supplementary monitoring, control, and automatic shut down systems. A subsurface safety valve would be located 100 feet below surface in each well. Also, two safety valves would be located on each wellhead Christmas tree, a safety valve would be at the edge of the wellsite, and a heater choke valve could all be closed.

Automatic emergency shut down valves are also located at 27 points along the pipeline - 18 line valves plus two valves at each of the nine line heaters. The purpose of these emergency valves is to isolate any portion of the system where a problem has been identified and shut-in the gas flow from upstream wells. An emergency response plan would be prepared by UPRC in close cooperation with local authorities to provide for necessary actions to safeguard the public and employees from emergency conditions such as fires, a release of sour gas, or incidents resulting from natural hazards. The plan would include the coordination procedures and responsibilities necessary to quickly and effectively respond in the unlikely event of an emergency. The plan would meet the Public Protection Plan requirements of the Department of Interior's Onshore Oil and Gas Order No. 6.

UPRC will develop a comprehensive plan for operating the system which incorporates procedures, schedules, and responsibilities for compliance with all regulatory, industry, and company regulations and guidelines. The plan will include a full regime of inspection, maintenance, and system monitoring and control.

The project update identifies the primary modifications UPRC has made in the 1984 project proposal. It also provides a synopsis of findings of environmental consequences disclosed in the 1984 EA and provides 1992 update discussions incorporating UPRC proposal modifications. Resource considerations, construction procedures and stipulations, reclamation procedures and other considerations contained in the 1984 EA are provided in the project update with minor modifications to make them current.

UPRC has estimated the potential tax revenue benefits to local, state and federal governments which may accrue over the life of the project. It is estimated that over $40 million in tax revenues alone would be experienced by the affected counties, Utah and Wyoming, and the federal government.

The project update also displays the numerous permits and approvals which would need to be secured prior to implementation of the proposal.

Finally, and most importantly, UPRC is committed to constructing and operating the Wahsatch Gathering System in a safe and environmentally responsible manner. Safety has priority over all other considerations.

Wahsatch Sour Gas Gathering System (Previously Cave Creek) Project Update

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WAHSATCH SOUR GAS GATHERING SYSTEM (PREVIOUSLY CAVE CREEK) PROJECT UPDATE

I. INTRODUCTION

Union Pacific Resources Company (UPRC) of Fort Worth, Texas, a subsidiary of Union Pacific Corporation, proposes to construct, develop, own and operate the Wahsatch Gathering System (WGS). The WGS project is a 40.4 mile long pipeline network that would transport sour gas*[1] from eight shut-in wells in the Yellow Creek Deep field of Uinta County, Wyoming and the Cave Creek field of Summit County, Utah to the Whitney Canyon Processing Plant north of Evanston, Wyoming (See Appendices A and B for maps of the project location and pipeline route and well locations). The sour gas would then be processed and delivered to interstate pipeline systems and gas markets.

The project was originally proposed to the Bureau of Land Management (BLM) in 1983 by Amoco Production Company as the Cave Creek Sour Gas Gathering System which included production from seven wells. An environmental assessment (EA) of the proposed project was conducted by the BLM in 1984. Based on the findings of a Final Environmental Assessment (FEA), the BLM approved use by Amoco of rights-of-way across BLM administered federal lands. Progress was also made toward securing necessary approvals and permits from state and local governments and other agencies.

Construction of the project was deferred due to the lack of available processing capacity at the Whitney Canyon Processing Plant. However, Amoco retained the system in its planning portfolio and continued to evaluate its Whitney Canyon field production trends, timing of availability of capacity at the Whitney Canyon Processing Plant, and gas marketing opportunities. Negotiations between UPRC and Amoco Production Company resulted in UPRC's acquisition of the project and Amoco's operating interest in the subject wells in August 1991. Today, processing plant capacity exists to accommodate production from these sour gas wells.

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[1] An asterisk following a phrase or word in this document indicates that the term is defined or explained in the glossary.

UPRC now proposes and intends to pursue construction of the gathering system and production from the originally proposed seven wells and an additional shut-in well within the Yellow Creek Deep field, the Celsius 4-36.

Portions of the gathering system and the Yellow Creek Deep field are close to the City of Evanston, residential and business areas, and the I-80/Union Pacific Railroad transportation corridor. The gas to be produced and transported through the project has high concentrations of toxic hydrogen sulfide (H_2S)* gas. UPRC expects and believes there should be strong local interest and public scrutiny of this project. People living and working near the system need to know what is proposed and how it may affect them. UPRC will be responsive to public concerns and questions. More importantly, UPRC acknowledges its responsibility for a project design and operation that will assure system integrity and public and worker safety.

UPRC has, therefore, carefully reviewed the pipeline system; has retained outside metallurgical, pipeline design, air dispersion modeling*, emergency response, and other experts to obtain state-of-the-art technological advice; and has studied other similar systems. The design, materials, and operations components incorporate today's scientific and technological knowledge. Modifications have been made to include proven materials and technology suited for an H_2S environment and for this project.

This document describes the primary components of the project proposed by UPRC including modifications to the 1984 proposal. It also provides a synopsis of findings of the 1984 environmental assessment on the previous proposal and reviews alternatives considered in the 1984 EA.

The circumstances under which this project may be considered are unique in that a similar proposal was advanced and received regulatory approval by the BLM and several other jurisdictions in 1984. Since that time, however, the BLM's Kemmerer Resource Area implemented a Resource Management Plan. The regulations, plans, and policies of other affected jurisdictions have evolved. Also, since the wells were originally drilled, the City of Evanston enacted an Oil and Gas Ordinance which pertains to wells within 1/2 mile of Evanston's corporate limits. Likewise, the area experienced demographic and economic changes. UPRC is cognizant of these developments and will be responsive to current regulatory and public processes. UPRC will work closely with the BLM, other federal and state agencies, Uinta County and Evanston, Wyoming, and Summit and Rich Counties, Utah. The purpose for providing this detailed project update is to develop a cooperative framework with these jurisdictions for reviewing the project implementation and identifying and addressing regulatory and/or public concerns.

II. PROJECT COMPONENTS DESCRIPTION

The proposed Wahsatch Gathering System (WGS) is a natural gas development which includes the construction, operation and final abandonment of a system of gathering lines, fuel gas lines, wellhead equipment, heaters, and slug catching* facilities. The multiphase* (gas and liquids) gas gathering system would initially transport an average of 55 million cubic feet of sour gas per day from six of the eight shut-in project wells near Evanston, Wyoming to Amoco's existing Whitney Canyon processing plant 16 miles northeast of Evanston. The system is proposed to be constructed during the summer and fall of 1993 and to be operated for an estimated 20 years. The gas to be transported contains approximately 13 to 18 percent H_2S by volume. The H_2S must be removed before commercial sale. Additionally, H_2S is lethal at this concentration. Therefore, the pipeline and facility design, construction, and operation must incorporate systems and procedures to protect worker and public health and safety and the environment. Federal regulation 43 CFR 3160, Operating Order #6 (Hydrogen Sulfide Operations) requires radius of exposure* calculations. The regulations also require preparation of a written public protection plan providing details of actions to alert and protect the potentially affected public in the event of a release of a potentially hazardous volume of H_2S.

The WGS proposal encompasses a nearly identical pipeline route and a project that is similar in scope and design to the Cave Creek Gathering System approved by the BLM in 1984. UPRC plans to utilize the existing approved right-of-way across Federal and private lands. UPRC's pipeline design and operating plans are consistent with the conditions of the Cave Creek Gathering Environmental Assessment which serves as the foundation for the WGS project update and will comply with stipulations in the BLM's Kemmerer Area Resource Management Plan and Bear River Resource Area's Management Framework Plan. The major exceptions to the project approved in 1984 are described at the end of this section.

PRODUCTION WELLS

Gas transported by the system would initially be produced from six wells. Five wells are in Uinta County, Wyoming's Yellow Creek Deep field in the vicinity of Evanston and the sixth well is in Summit County, Utah's Cave Creek field. In the Yellow Creek Deep field, the Harry Moon, Bradbury, Urroz, and Urroz B-1 wells would be operated by UPRC. An additional Yellow Creek Deep well, not included in the 1984 approval, the Celsius 4-36, would be operated by Celsius Energy Company. In the Cave Creek field, the Fawcett and Sons well is also operated by UPRC and is located about eleven and a half miles southwest of Evanston. As production from these wells declines over time, it is planned to initiate production from two other Yellow Creek Deep wells near Evanston, the Kindler Reese and

Champlin 375 C-1 wells. All eight wells were originally drilled and tested in the late 1970's early 1980's. They have been shut-in since testing and because there was no available pipeline for delivery of the gas, no commercial production occurred from any of the wells.

Wellhead production areas are already established and have existing road access. Each of the eight areas is approximately 400 feet by 400 feet. Fencing and a locked gate would be installed around each wellsite to control access. The production areas for each well would contain the wellhead, a heater to maintain gas temperatures and prevent hydrate* formation in the system, a series of pipes connecting the well and heater, storage and pump skids for corrosion chemical and methanol.* There would be no permanent separation or production storage facilities at the wellsites. Multiphase flow meters will be situated at each wellsite. Continuous ambient H_2S monitoring and safety control and shut-in equipment would be installed at each wellsite. Ambient air monitors are set to activate alarms at H_2S concentrations of 20 ppm and to activate automatic ESD valve closure at 40 ppm. Appendix C displays the typical wellsite configuration.

Other visible equipment located within the fenced well location would include: the telemetry building which would be approximately ten feet by ten feet and about nine feet tall; and an onsite emergency flare stack measuring approximately 30 feet high. There would also be wind socks and well condition lights of sufficient height to be viewed from anywhere within the location and from the approach to the locations.

Well recompletions would need to be conducted for the existing shut-in wells for production to be initiated. Operation Order #6, Section III A1 will be complied with during well recompletions. Each well would require drilling out the cement retainer and cement covering the productive formations which range in depth between 11,000 and 13,000 feet. A majority of the 1,000 foot productive zone thickness would be perforated and acidized to restore production. Production would be commingled from both the Phosphoria and Weber formations. Existing wellhead equipment would be replaced with new H_2S resistant components. UPRC anticipates installing electrical power for operation of a chemical pump, telemetry equipment, cathodic protection* equipment, and H_2S sensing equipment. Existing electrical service is available near wellsites except for the Fawcett and Sons well. Attention will be given to minimizing visual effects of new power lines. Lines would not be placed where they would be visible on the horizon. On a case-by-case basis UPRC will consider the visual resource and the distance to power access in determining whether to use above ground lines and poles or buried cable to wellsites. Where power poles are used, they would incorporate measures to protect raptors from electrocution.

Prior to conducting recompletions, permits would be required from the Wyoming Oil and Gas Commission for Wyoming wells, the Utah Division of Oil, Gas and Mining for the Utah well, and the City of Evanston for wells within 1/2 mile of the city's corporate limits. For the Celsius 4-36 well to be connected to the WGS, UPRC would require Celsius Energy Company to agree to incorporate wellhead materials, wellsite components and design, and well operational procedures and/or stipulations of at least equal level of standard to those applied to UPRC operated wells.

It is proposed to conduct recompletion and production testing of the Urroz #1 well in late summer 1992. Gas produced during testing would be flared at a temporary flare stack at the Wahsatch Flare Site. Prior to recompletion and production testing, approval for well reentry would be secured from the Wyoming Oil and Gas Commission; the existing buried Wahsatch Flare system pipeline would be pressure tested to assure pipeline integrity; and Utah air permits would be obtained for flaring. It is critical to determine the integrity of the shut-in wells prior to project construction to assure that production can be successfully restored. The Urroz #1 well was selected for pre-construction recompletion and production testing because it is relatively remote and it can easily be connected to the Wahsatch Flare system pipeline for remote flaring of the gas. During this same period, well casing and pipe inspection surveys would be conducted for other wells to ascertain casing integrity.

There is a possibility that at some time in the future exploration wells may be drilled in the vicinity of the proposed gathering system and if successful, there is a potential that other wells could be connected to the system as pipeline and Whitney Canyon Processing Plant capacity become available. The possibility of such developments is uncertain. However, if they were to occur, the life of the gathering system could be extended. Should new production wells be drilled or the system be modified to accommodate them, such actions would be subject to all regulatory and permitting requirements including NEPA compliance.

PIPELINE

The pipeline system incorporates the sour gas pipeline, a parallel fuel gas supply line, 27 automatic emergency shut down* (ESD) valve locations, and nine heater locations each rated at a maximum of 3 MMBTU/HR and with an additional ESD valve at each heater location (See Appendix D). The pipeline system would connect wellhead production areas to the Whitney Canyon Plant. The purpose of the ESD valves is to control and isolate a section of pipeline in the unlikely event of a leak or rupture. These valves are automatic and will function to limit the amount of sour gas which would be released thereby reducing risk to employees and the public.

The pipe design is a seamless, low hardness steel specifically designed for sour gas multiphase conditions. The minimum pipe wall thickness would be 0.188 inches. Heavier walled pipe ranging up to 0.500 inches in thickness would be installed for certain sections of the line such as road borings and the Bear River crossing. Heavier walled pipe would also be used for the Urroz spur and Kindler Reese spur. This will allow upgrading the pipe for Class II service as prescribed by the U.S. Department of Transportation (DOT). This design consideration provides an additional design margin of safety to those persons located nearest to the pipeline system. The pipe used for the sour gas line would be coated externally to prevent external corrosion. Over that coating the pipe would be insulated with polyurethane foam to retain gas stream temperature. The insulation is protected with an external coat of high density polyethylene.

The pipeline design consists of laying 8.2 miles of insulated 6 inch line north from the Fawcett & Sons well to the Urroz junction. The Urroz spur would have 3.7 miles of 3, 4, and 6 inch insulated lines servicing five wells. A 10 inch diameter insulated line would run 25.5 miles north and east from the Urroz junction to the Wahsatch Delivery Facility adjacent to the Whitney Canyon Processing Plant Inlet. Approximately 4.7 miles of the proposed system would be constructed along a portion of the existing Wahsatch Flare System right-of-way. When production from the Kindler Reese and Champlin 375 C-1 wells is contemplated, 3.1 miles of 3 and 6 inch insulated lines would connect these wells to the pipeline as displayed on the route map.

The pipeline would have the capacity to deliver 64 MMcfd (million cubic feet per day) of sour gas and would operate at a pressure of 1600 pounds per square inch gauge (psig). The maximum allowable operating pressure (MAOP) would be 1760 psig. Internal pipeline corrosion would be controlled by using (1) corrosion inhibition fluids, (2) increased pipe wall thickness, (3) specially manufactured, high quality, steel pipe and fittings with increased resistance to H_2S, and (4) periodic "pigging"* of the line to prevent fluid buildup. External corrosion would be controlled by the external coatings on the pipe and cathodic protection.

At each of the line heater locations it is anticipated that two-50 barrel storage tanks would be needed to provide the ability to inject corrosion inhibitor fluid and methanol for efficient in-line system treatment. The tank sites would be bermed for containment and located a minimum of 75 feet from the heater ignition source for safety and environmental reasons. Appendix G (Heater Locations) depicts eight line heater locations. The UPRC proposal anticipates addition of a ninth line heater depending upon system performance. Effects of nine line heaters are discussed although a specific location for the ninth is not identified.

A low pressure sweet fuel gas line consisting of sections of 2, 3, and 4 inch steel pipe would be laid in the same ditch parallel to the primary sour gas pipeline to deliver residue gas from Whitney Canyon Plant to service wellsite and pipeline facilities. The gas would be used to operate ESD valves, heaters, high/low pressure instrumentation, pneumatically operated pumps, and for other purposes. The three inch liquids line used by Amoco Production Company during production testing of the Yellow Creek Deep field wells is still in place. This line may be utilized as a fuel gas line for the Urroz Spur and south of the Urroz Junction to the Wahsatch Flare Site if pressure testing demonstrates its integrity and safe use for this purpose.

The pipelines would be buried a minimum of six feet from the top of the pipe to the ground surface and generally would require a trench about three feet wide, but not to exceed eight feet in width. Calculations have been made which determined that the insulated pipeline and its heated contents would have no heat effect upon surface ground temperatures, vegetation, or snowmelt above the pipe. Emergency shut down valves would be located above ground. The line would be fully pressure tested prior to operation and be subject to regular inspection and maintenance over its operational life. Following any repair, the repaired section would be pressure tested to assure its integrity and in accordance with specified requirements in U.S. Department of Transportation pipeline regulations Part 192.

PIPELINE CORRIDOR

The planned pipeline route is nearly identical to that approved in 1984 (see Appendix B). Some modifications have been made in the route to address issues or to incorporate new proposal components. About three and one-half miles of route alignment west of Almy along the Utah/Wyoming state line is shifted about 2,000 feet west. This modification is to avoid severe rock outcrops and gullying in Bartlett Hollow. Two and one-half miles of the route shift would occur on private lands. One mile would move from private lands to BLM lands. Most of the three and one-half mile segment would move from Wyoming into Utah. The modification results in a 700 foot decrease in the total length of the pipeline. Also, an additional short connection line would be laid to include the Celsius well in the system (State of Wyoming land). A minor deviation is made in the line connecting the Harry Moon well to the Urroz Spur at the request of the private landowner. The Urroz Junction and the line from the Junction to the Utah/Wyoming state line is slightly shifted (private lands).

The route crosses private, federal, and Wyoming and Utah state-owned lands as displayed on the Land Ownership Map in Appendix E. The route originally proposed in 1983 was modified during preparation of the 1984 final environmental assessment to move the pipeline further west from the Bear River Valley and away from newly developed rural subdivisions,

mobile home parks, and other developments north of Evanston. That portion of the corridor modified in 1984 is retained in the UPRC proposal because it represents the safest approach for delivery of this sour gas to Whitney Canyon.

A 100 foot wide temporary right-of-way would be required for pipeline construction. A 50 foot permanent right-of-way would be required for the life of the system with an adjacent 50 by 100 feet of area for the heater locations (about 1.1 acre total additional right-of-way) as discussed below. Pipeline construction would be consistent with BLM stipulations and would be conducted during periods to avoid seasonally sensitive wildlife habitat and nurturing areas. Disturbed areas would be revegetated with desirable native species and as prescribed by the BLM and/or affected private landowners. The state wildlife agency will be consulted when revegetating sensitive wildlife habitat. In a worst case scenario (if the entire 100 foot right-of-way were disturbed), 531 acres of surface area would be disturbed and require reclamation and revegetation.

After successful revegetation, the primary visual changes within the pipeline corridor would be above ground facilities required for pipeline operation and safety. Except for safety and warning signs, all above ground facilities would be painted to blend in with the natural surroundings using appropriate colors from the Munsell Soil Color Charts. Facilities would be visible at the heater locations. These would include the heater (about 10 feet by 20 feet and eight feet high with a 15 foot stack), two 50 barrel storage tanks (each about 8.5 feet in diameter and five feet high), the emergency shut down valves, and a telemetry antenna (support tower 10 to 20 feet high). Emergency shut down valves would be located above ground. At ESD locations, a short segment of pipe (20 to 25 feet), the valve assembly, and telemetry antenna would be visible. At all above ground locations where there is not ready access to electric power, electrical power will be derived from a solar cell mounted on the telemetry antenna support tower. Solar cell power will be supplemented with batteries maintained below ground surface at the tower. Where electrical power is readily accessible, consideration will be given to visual quality effects in determining whether electric power lines should be buried or delivered on power poles. Wind socks would be located at each heater and/or ESD location.

The two 50 barrel tanks located at each heater site will enable UPRC to strategically inject both corrosion inhibitor and methanol fluids for pipeline protection. The tank size was selected to minimize the frequency of necessary truck traffic to the heater locations for replenishment of these fluids. It is estimated that both tanks at each heater site will need to be refilled semi-annually.

Signage would intentionally be highly visible. Signs would be placed along the corridor, at heater locations, emergency shut down valves, and at road crossings, ditch and stream crossings, and other places likely to be frequented by people. The purpose of the signs is to alert people to the potential existence and dangers of sour gas and to avoid inadvertent damage to the line from digging, backhoe operation, etc.

Cathodic protection test stations would be an integral part of the right-of-way signage points and located at least every 1/2 mile along the pipeline. These test stations will allow UPRC to monitor the performance of the cathodic protection system. The test station consists of two wire leads connected from the exterior surface of the pipeline into the above ground sign itself. These stations would be monitored concurrent with the periodic gas detection surveys. A rectifier station, as part of the pipeline cathodic protection system, is proposed at the heater location just north of U.S. Highway 16. This installation will be located on an adjacent power pole roughly six feet above ground level.

In addition to BLM right-of-way approvals, permission for use of rights-of-way is required from the State of Wyoming, the State of Utah, and individual landowners. Table 1 summarizes miles and acres of lands by ownership which would be affected by the pipeline right-of-way and other land-use aspects of the project.

Table 1. LAND OWNERSHIP AND ESTIMATED AFFECTED SURFACE AREAS

Component	BLM Lands		State Lands		Private		Total Lands	
	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres
Gathering Lines	7.6	92.1	4.8	58.1	28.0	339.0	40.4	489.2
Existing Wells				3.7		25.7		29.4
Heater Locations		0.1		0.2		0.8		1.1
Delivery Facility						7.0		7.0
Flare Site						4.0		4.0
Total by Column	7.6	92.2	4.8	62.0	28.0	376.5	40.4	530.7

These estimates include total estimated site dimensions and rights-of-way. Not all surface areas would be subject to disturbance during construction/operation.

Also, use permits or certificates are required from Uinta County, Wyoming and Rich and Summit Counties, Utah. Permits are also required from the Utah Department of

Transportation for crossing the Interstate 80 right-of-way and Utah State Highway 16 just west of the Wyoming/Utah state line in Rich County. Approvals would be required to cross other roads and the Union Pacific Railroad. Approval would be required from the Corps of Engineers and EPA for wetland disturbance in the Bear River Valley.

The siting program for heaters has considered existing road access. It is anticipated post-construction access to wells, heaters, and other frequently serviced components would be by existing roads with only short-distance site entrance road additions needed.

A concern expressed in 1984 was cumulative effects of multiple energy development activities within the crucial mule deer winter habitat in the vicinity of Whitney Canyon. In addition to revegetation of areas disturbed during pipeline construction, UPRC proposes to conduct off-site wildlife range enhancements on an acre for acre basis within the habitat area as mitigation for temporary loss of forage in disturbed areas. UPRC will develop with the BLM and the Wyoming Game and Fish Department appropriate plans for beneficial off-site wildlife habitat improvements.

WAHSATCH DELIVERY FACILITY

UPRC plans to acquire about seven acres adjacent to the Whitney Canyon inlet area for a new delivery facility. It is believed that the new delivery facility would be constructed upon an existing abandoned well pad, which would minimize additional surface disturbance in the area. The new delivery area would include an estimated 2,600 barrel capacity slug catcher, a "pig" receiver*, a heater/treater (up to 3 MMBTU/HR capacity) for gas and liquids separation, pumping and metering facilities to accommodate production delivered to the Whitney Canyon Processing Plant from the WGS. A schematic drawing of the Wahsatch Delivery Facility is in Appendix F. An emergency flare (at least 50 feet high) designed to depressurize the pipeline system in one hour will be added at this site. Early in the project life, the delivery facility pressure would range from 850 psig to 1150 psig. Later in the project life, this pressure is expected to decline to about 300 psig.

HEATERS

Heaters are proposed to be installed at each wellsite, at the delivery facility, and along the pipeline to maintain gas temperatures for the prevention of hydrates in the system. Appendix G displays heater locations. Heaters operate through a heat exchange process similar to a home gas hot water heater. The heaters to be used would be indirect heaters. This type of heater is a vessel containing two sets of coils submerged in a heat medium fluid, such as a mixture of glycol and water. One set of coils, called the firetube, is larger and

contains the fuel gas burner assembly. The firetube is open to the atmosphere thus allowing air to enter for combustion of the fuel gas and discharge of the combustion product gases. The other set of coils, called the process coil, is connected to the pipeline for passage of the pipeline stream. Heat from the combustion of the fuel gas is transferred first to the heat medium through the firetube wall and then through the heat medium to the pipeline stream through the process coil wall. Indirect heaters are safer because the heat medium prevents direct flame contact from the gas burner with the process coil wall and a lower process coil wall temperature, thus preventing "hot spots" which cause process coil failure. Appendix H displays the heater configuration.

All heaters would be fueled by sweet residue gas from the Whitney Canyon Processing Plant delivered to heater locations by the fuel gas pipeline system. Noise level ratings for the heaters are approximately 90-95 decibels 10 feet from the burner assembly. The noise level rating at 1,000 feet from the burner is estimated to be 50-55 decibels. Heaters at the Harry Moon and Bradbury wells would be audible outside of a vehicle at I-80 and at the nearest dwellings. For purposes of comparison, noise levels for some common and familiar noises include: normal conversation is usually about 60 decibels; a vacuum cleaner generates noise at 75 decibels; a chainsaw at 100 decibels; and the "quiet" of a library is about 40 decibels.

Heater operation would produce nitrogen oxides* (NOx) which would be emitted into the atmosphere. Heaters would have BACT (Best Available Control Technology) low NOx burners to reduce emissions. Annual NOx emissions are estimated to be 0.40 tons per million Btu per hour process design capacity per year. If all 18 heaters were installed at a process design 3 MMBTU/HR capacity, total NOx emissions would equal 31.5 tons per year. For carbon monoxide (CO) emissions, it is estimated that the total annual emissions (if all 18 heaters were used at a 3 MMBTU/HR capacity) of CO would be 56.0 tons. Emissions of hydrocarbons are estimated to total 20.5 tons per year. These emissions reflect aggregate emissions from individual sources along the pipeline route (an average distance between line heaters is 3.4 miles). No emission levels exceed state ambient air quality standards.

Line Heaters - Nine line heater units with a maximum capacity of 3 MMBTU/HR (a maximum total of 27 MMBTU/HR installed capacity) would be installed along the gathering system's pipelines. At each in-line heater location, an additional 50 feet of right-of-way would be required on one side of the right-of-way to accommodate a 75 by 100 foot area for heater location, operation, maintenance, and security. Heater locations would be fenced.

Wellsite Heaters - Heaters would be located at each wellsite, a total of eight heaters, with a maximum capacity of 3 MMBTU/HR for a total maximum capacity of 24 MMBTU/HR.

Wahsatch Delivery Heater - A heater/treater at the delivery facility area adjacent to the Whitney Canyon Plant would be installed for separation of oil, gas, and water into separate streams. The heater would have up to 3 MMBTU/HR capacity.

WAHSATCH FLARE SYSTEM

When the shut-in wells were originally drilled, Amoco Production Company laid a pipeline system to a fenced private land site in Utah 3.4 miles southwest of the Yellow Creek Deep field where flaring was conducted during production testing. The 6 inch diameter flare system pipeline, the parallel 3 inch liquid line, and flare use were permitted, used, and decommissioned. The flare stack was removed, but the pipeline, slug catcher, and the right-of-way remain in place. Of the six shut-in wells proposed for initial production, all but the Fawcett and Sons well have access to that pipeline and the flare site. UPRC proposes to construct a flare stack approximately 90 feet in height at this site, pressure test the existing flare system pipeline to determine its complete integrity, and use this pipeline and flare stack to periodically test the five Yellow Creek Deep wells proposed for initial production. It is anticipated that some separation equipment and storage tanks would be required to handle any liquid accumulation recovered from the slug catcher. Initial production testing for the five well recompletions proposed to be flared at the Wahsatch Flare would require flaring during daylight hours for an estimated 24 to 48 hours total over a week for each well.

The production testing of the Fawcett and Sons well would not be conducted through this flare system. Also, it is not proposed that eventual production testing of the Kindler Reese and Champlin 375 C-1 wells be conducted through the Wahsatch Flare System. Instead, for these three wells, limited flaring would be through separate flare stacks at the individual wellsites. These wellsite flare stacks would be maintained for emergency use.

The flare system would be maintained throughout the life of the gathering system and would be available to depressurize the WGS in the case of an emergency line evacuation. Flaring would produce toxic sulfur dioxide* (SO_2) gas. Heat from combustion of the gas during flaring would cause the SO_2 to quickly rise into the atmosphere and rapidly disperse. This flare system is an efficient, remote, and safe means of flaring gas away from sensitive areas.

DESIGN SAFETY ASPECTS

The presence of H_2S in the gas to be transported by the WGS requires special design considerations to ensure the safety of the public and the operator. The system would transport sour gas containing up to 180,000 ppm (parts per million) H_2S. Continuous human exposure to concentrations of H_2S at 300 ppm for 30 minutes is considered to be

dangerous to life and health. UPRC is keenly sensitive to the proximity of Evanston, Wyoming and residential/commercial development in the Bear River Valley to the Wahsatch Gathering System and to the absolute necessity of assuring public safety. All pertinent aspects of the project as advanced by Amoco Production and approved by the BLM in 1984 were reviewed by UPRC and outside experts to assure that current state-of-the-art materials, systems, and procedures are utilized in project design, construction, and operation. Additionally, in November 1991, new federal regulations applicable to operations involving oil and gas containing hydrogen sulfide were promulgated to protect the health and safety of the public and operating personnel. Project modifications, therefore, include compliance with the requirements of these regulations, Onshore Oil and Gas Order No. 6 (43 CFR Part 3160, section III). The WGS design includes proven control technology and recommended materials and practices developed by the American Petroleum Institute (API), National Association of Corrosion Engineers (NACE) and the American National Standards Institute (ANSI). UPRC commissioned new air dispersion modeling, risk analysis, and hazardous operations studies utilizing the latest methodology to reassess and fully understand the safety aspects of the project and to incorporate features into project design to address H_2S safety issues. Major safety features incorporated into the project design are discussed below.

Siting Constraints/Risk Analysis - All of the wells proposed for production and the gas processing plant are existing and their locations are fixed. During previous consideration of the project in the early 1980's, several alternative pipeline routes were considered. The route selected and retained in this proposal was chosen because it establishes a safe distance between the line and any existing residential or commercial development. The gathering line north from I-80 to the Wahsatch Delivery Facility is 2,500 feet or more from existing residences, businesses or public facilities. The Bradbury and Harry Moon wells are closer to occupied structures. These wells are just south of I-80. The nearest house to the Harry Moon well is 1,400 feet away north of the Interstate. The distance between the nearest dwelling and the Bradbury well is 1,000 feet. This house is also north of the Interstate. All other wells are 2,500 feet or more from occupied structures. The Wahsatch Flare site is 2,500 feet from a ranch house.

A primary issue considered by the Bureau of Land Management in its 1983-84 permitting reviews of the proposed gas gathering system was the potential risk to the public from an accidental release of sour gas. Due to the proximity of portions of the system to the City of Evanston and its environs, it is essential that the community, regulatory authorities, and UPRC understand the risk associated with a sour gas release.

UPRC has made modifications in the gathering system proposal advanced in 1984. Measures have been incorporated in pipeline, wellhead, and system design specifically to reduce the probability of an accidental release of gas. Furthermore, there have been advancements in air dispersion modelling techniques and a larger data base exists from which to project the likelihood of pipeline or wellhead accidental releases. It was, therefore, necessary to obtain an up-to-date risk analysis. UPRC retained a company with petroleum industry expertise in hazards and risk analysis for this purpose. Quest Consultants, Inc., conducted a new analysis to determine potential risks associated with the Wahsatch Gathering System's pipelines and wells. The technical report of the analysis is available from the BLM Rock Springs District Office.

The new analysis finds there is an extremely small risk to people. To put the level of risk in perspective, it is 160 times more likely to be fatally injured by a lightning strike than it would be for individuals living or working at existing structures closest to the wells and gathering system to be fatally injured by an accidental release of gas.

While the produced gas has high concentrations of toxic H_2S, so long as the gas is contained within the pipelines, there is no danger to the public or environment. It would only be in the accidental event of a system component failure or of outside damage to the system that gas could be released into the atmosphere. An accidental release of sour natural gas from the well/pipeline system could create potentially life-threatening hazards to persons near the location of the gas release.

To determine the risk the pipeline and wells pose to the public along the pipeline route, four major tasks were undertaken:

1) Determine potential pipeline and wellhead accidents that could create life-threatening hazards to persons located near the pipeline or well sites;

2) Determine the frequency of occurrence (probability of the accident occurring) of each accident identified in task 1;

3) Determine the consequences of each accident from task 1 if it were to occur; and,

4) Combine the consequences and probability of occurrence of each accident to arrive at a measure of the public risk created by the pipeline and well network.

Once the possible pipeline and wellhead accidents which could pose a threat to the nearby public were determined, the probability of these accidents occurring was computed based upon governmental statistics of similar pipeline and wellhead accidents. Computerized consequence models were used to calculate the extent of area within potentially lethal hazard zones for toxic vapor clouds and/or gas fires created by each potential accident. The calculations were repeated for numerous combinations of wind speed and atmospheric stability conditions to account for the effects of the local weather data.

The number of people potentially exposed to a specific hazard zone is influenced by wind direction, population density and proximity to an accidental release. Other factors influencing potential for exposure include whether or not a vapor cloud is ignited, H_2S concentrations in the gas at that pipeline location, and physical aspects of the pipeline such as diameter and operating pressure. Because several circumstances change at different points in the system, calculations of expected failure rates and potential human exposures were done for each segment of pipeline and each well.

For each pipeline section or well site, one particular accident under "worst case" conditions would create the largest potentially lethal hazard zone. As an example, along the 10 inch diameter section of pipeline crossing under Interstate 80 and going north to the Wahsatch Delivery Facility, the largest potential accident is a full rupture of the pipeline without ignition of the flammable cloud. This results in a possible toxic exposure downwind of the release. Under worst case atmospheric conditions, this toxic hazard zone extends out 2,600 feet from the point of release. Under the worst case conditions, it takes about 11 minutes for the cloud to reach its maximum extent. For this section of pipeline, it could be depicted that the largest potential hazard zone could extend out 2,600 feet on each side parallel of the pipeline. It is important to note that all of this area would not be affected by one accident. The hazard footprint of the single largest accident under worst possible conditions (full pipeline rupture, wind blowing perpendicular to the pipeline at low speed, stable or stagnant atmospheric conditions, and no vapor cloud ignition) would occur within this hazard corridor, but only at the specific location of the accident. Under these described conditions, it is calculated that the vapor cloud would be a maximum of 230 feet in width and extend perpendicularly out from the pipeline a maximum of 2,600 feet.

These calculations were also conducted for the Harry Moon and Bradbury wells and the 3 and 6 inch gathering lines closest to established/occupied structures, the portion

of the system south of I-80. Based on worst possible conditions (a well blowout or pipeline rupture, wind blowing to the north at low speed, worst atmospheric conditions, and no vapor cloud ignition), portions of I-80 and existing structures within 2,000 feet north of the wells and gathering lines are within a hazard corridor. If there were a complete pipeline rupture or well blowout under these worst case conditions, it is possible that the hazard footprint of a toxic vapor cloud could affect a specific area within the hazard corridor based upon the event and wind speed. However, the probability of that occurrence is extremely remote. The risk of a fatality has been calculated for various distances from the wells and pipelines using all of the factors previously described. It was determined that if an individual spent 365 days a year 165 feet from the system, the individual would have one chance in a million each year of being fatally exposed to a gas release. People spending 365 days a year at a point 1,750 feet away from the Bradbury well would have a probability of one chance in one billion of being fatally exposed to an accidental release of gas.

The modelling results for all system components were integrated to obtain a measure of the overall risk of exposure to hazardous levels of H_2S anywhere along the system. As expected, the results indicate the risk of exposure is highest at locations directly above the pipeline or at a wellhead, and rapidly decays with distance away from these locations. Even directly above the pipeline or at a wellhead, the calculated annual risk of fatality due to gas releases from the system falls within the range generally considered acceptable for involuntary exposure (i.e., public exposure), according to criteria used by various international agencies and regulatory bodies.

To put this type of evaluation into perspective, it is instructive to look at the types of risks people are ordinarily exposed to during day-to-day life. The table in Appendix I, Individual Risk of Early Fatality by Various Causes, lists risks a citizen of the Evanston area might be exposed to each and every day. As can be seen in the table, there are voluntary (driving a car) and involuntary (being hit by lightning) activities that involve risks that are much higher than those due to the WGS proposed pipeline/well network. The Appendix also provides information on health effects for various concentrations and times of exposure to H_2S.

The siting constraints involved with this project (i.e., existing wells in proximity to existing occupied structures, all of which are in fixed locations) dictate that the analysis and consideration of risk to the public be an important element in project design, construction and operation plans, and emergency response procedures.

Materials Selection - Pipe steel, pipe fabrication, valves, and wellhead materials and design would be selected, ordered, and monitored during manufacture and installation to meet stringent specifications developed for use in an H_2S environment. The existing wellhead equipment would be replaced with new equipment designed to meet current API 6A specifications for high H_2S concentrations in close proximity to occupied structures. The downhole assembly would consist of H_2S resistant materials in the permanent packer, methanol injection valve, subsurface safety valve, and 2 7/8 inch tubing design.

The existing 7 inch production casing in each well contains low hardness steel suited for H_2S operating conditions. To further minimize corrosion effects to the production casing during sustained shut-in periods, Amoco squeezed cement into the perforated intervals through a cement retainer to isolate the gas and casing. Each of the wells was filled with corrosion inhibitor fluids to further minimize corrosion. Periodically during the last nine years, all of the wells have successfully been pressure tested to assure integrity of the production casing.

Construction Procedures - The pipeline would be buried a minimum of six feet from the top of the pipe to the ground surface, twice the normal burial depth for gas pipelines required by the U.S. Department of Transportation. At this depth it is extremely unlikely that surface activities (unauthorized digging or backhoe operation) would impact the line. The following special procedures would be implemented to prevent construction defects. Only buttweld* connections would be used in connecting pipe sections and fittings; no screwed or socket-weld* connections would be permitted. All welds would be visually inspected and radiographed. The entire pipeline would be pressure tested before being placed into service. The system would be tested at 1.5 times maximum operating pressure if water were used as the test medium or 1.15 times operating pressure if nitrogen were used.

Corrosion Prevention and Monitoring - H_2S is corrosive to some metals. Therefore, system design, materials, and operation must incorporate features to minimize the corrosive effects of H_2S and to monitor the system to detect and repair any affected components. As described above, materials have been selected for use in the wellheads and pipeline which are resistant to H_2S. If necessary, as determined from the corrosion monitoring program, a corrosion inhibitor fluid would be continually run through the pipeline from each wellhead. This fluid flows with the gas adhering to the inner wall of the steel pipe acting as a buffer between the gas and the steel. The inhibitor fluid is separated from the gas along with other liquids at the Wahsatch Delivery Facility and is processed with the hydrocarbons. No disposal is required of

the corrosion inhibitor. The pipeline would be pigged regularly to remove fluid buildup throughout its length. All fluids would be received at the delivery facility's slug catcher and be delivered to the Whitney Canyon Plant for further processing. Heaters at wellheads and along the pipeline also will prevent the formation of hydrates in the pipeline by maintaining the temperature of the gas and reducing condensation. In addition, cathodic protection would be installed to mitigate external pipeline corrosion.

The system would be subject to regular and comprehensive inspection and monitoring of corrosion. Short sections of pipeline, called spool pieces, would be installed which can be periodically removed for thorough inspection. Corrosion coupons, hydrogen probes, and electronic probes would be contained within the spool pieces and used for monitoring corrosion. Over the life of the pipeline, any new or replacement pipe repaired sections would be pressure tested under procedures described in DOT 192. Also, a "smart pig*" would periodically be run through the 6 and 10 inch lines from the Fawcett and Sons well (including the Urroz spur) to the Wahsatch Delivery Facility. This computerized device would detect physical defects or corrosion effects including gouges, pits, or hairline fractures. The procedure affords diagnosis of weaknesses or areas potentially susceptible to leakage. Should inspection or monitoring detect any physical problems, repair or replacement would be done immediately.

System Monitoring Program - A Supervisory Control and Data Acquisition (SCADA) System would be used to monitor operating parameters as well as output from all ambient air monitors. The SCADA system would also operate emergency shut down (ESD) valves. The SCADA system would include a master terminal station and a redundant backup station at UPRC's local operating office to be located in Evanston. Remote Telemetry Units (RTU's) would be located at each well, each heater, each ESD valve site, the Wahsatch Flare site and the Wahsatch Delivery Facility site.

Each RTU would monitor local conditions and provide local control (ESD closure and heater operation) as required. Individual data points are scanned once per second and all data are reported to the master station through a continuous scan sequence. Any data point which exceeds a preset level would generate an immediate report to the master station and may execute a local control function. Each RTU is a stand alone device which will not rely on communication from the master station to react to local alarm conditions, or execute pre-programmed control functions. Should a loss of communications occur, the master station or RTU would detect the

situation. Redundant communication paths will be used and the master or RTU will automatically switch paths.

The master station will contain logic applicable to multiple RTU's. Should an RTU report an alarm which requires a control function, the master station would determine which additional RTU's, if any, should be triggered to act based on the data reported. The master station will also include a digital voice response system which will provide dial-out capability to call pre-programmed phone numbers in the unlikely event of an emergency.

Other monitoring would be done in addition to the SCADA's continuously monitoring data on a 24-hour basis from the individual well, heater, and valve sites. Operating personnel would conduct an inspection of the ESD valves and test the ambient air monitors a minimum of once per month. A ground survey along the entire gathering system would be conducted at least every five months using gas detection equipment. The wellhead sites and delivery facility site would be inspected daily by operating personnel. Line heaters would be inspected weekly by operating personnel. As was previously discussed, the pipeline system and wellhead production areas would be monitored for corrosion and taken out of service for repair if required. Wind socks to indicate wind direction would be located at each wellsite, line heaters and ESD valves, the Wahsatch Flare Site, and the Wahsatch Delivery Facility.

Finally, a short-term loss of power, communications, or failure of the computer system would trigger the closure of the ESD valves for the area affected.

Leak Detection - The primary system for detecting leaks along the pipeline is integrated into the SCADA system. The integrated system components would include pressure gauges, field equipment and process control, computer systems and software, and a communication system linking gauges, computers, and valve switches. If the SCADA system detects a probable leak, the system would sound an alarm, close valves to isolate the location of the probable leak from the rest of the system and shut in any wells upstream of the closed valves. This action would be initiated immediately to prevent exposure to the environment or public.

Ambient air monitors would be used at all above ground well and pipeline facilities. They would be located at each well, heater, emergency shut down valve site, and at casing vents for the I-80, Union Pacific Railroad, and Utah State Highway 16 crossings. These detectors would sound an alarm at UPRC's local operating office

in Evanston at an H_2S concentration of 20 ppm. If the H_2S concentration reached 40 ppm, the equipment at that site would be shut in by the local RTU. The RTU would also communicate the 40 ppm level to the master station where an alarm would sound and valves would be closed to isolate the location from the rest of the system and shut in any wells upstream of the closed valves.

Automatic Shut Down Systems - Automatic shut down systems are incorporated into the wellhead and downhole equipment as well as in the pipeline, as described above. The purpose of the shut down systems is to close valves and isolate sections of the system. This in turn reduces the quantity of gas which could be released into the atmosphere in the unlikely event of a rupture or leak. At the well, a subsurface safety valve would be installed at least 100 feet below the surface to prevent the release of sour gas in the event of a wellhead failure. Surface safety valves would also be installed on each wellhead to shut in sour gas in event of surface failures or in response to commands from the SCADA system. These automatic shut in valves would be actuated in the event of abnormal pressures in the well or in the pipeline system to shut off flow of gas from the well.

Fusible links would be installed in each of the control lines to the subsurface safety valve and the wellhead actuators. These fusible links melt in the presence of extreme heat or fire. In the event of a wellhead or onsite fire, the link would melt and relieve pressure from the control line thus resulting in automatic closure of these valves. These same fusible links would be installed at all above ground installations throughout the system.

The ESD valves and other pneumatic automatic shut down valves are designed to "fail safe" close in the event of a loss of pressure in the sweet gas fuel line. These valves require pressure to maintain an open position and in the absence of pressure, these valves will automatically close. ESD valves would also close if abnormal pressure were experienced in the sour gas line itself. If pressure in the sour gas line exceeded or dropped below pre-set high/low pressure conditions at any individual valve location, the ESD valve would automatically close. All hydraulically actuated valves will also incorporate this "fail safe" closure system.

An emergency shut down valve and check valve would be installed at the edge of each well production site to prevent sour gas from flowing back from the pipeline to the site in the event of wellhead equipment failure. Ambient air monitors would be installed at each wellsite and operate as described above. A detection of H_2S

concentrations greater than 40 ppm would initiate an automatic shut down of the wellhead equipment which could not be overridden from a remote location.

ESD valves would be located at each heater location and at strategic points in the pipeline to stop gas flow and isolate gas within the line between these valves in case of pipeline failure. These valves would be linked to the SCADA system as described above. The local RTU would automatically close these valves in the event of an irregular pressure loss in the pipeline. The ESD valves would close automatically if the ambient air monitor at the site detected an H_2S concentration of 40 ppm. Valves would also respond to commands from the SCADA system as described above.

The maximum time from an initial monitoring or leak system alert signal to initiation of situation response is one minute. ESD valve closure would be complete within 10 to 20 seconds of activation.

Flares at the Wahsatch Flare site and the Wahsatch Delivery Facility, as described previously, would provide a means for depressurizing the pipeline system, and burning the sour gas at locations which are remote from sensitive areas. Appendix J displays ESD valve locations and the Wahsatch Flare site. Appendix H shows configurations for ESD shut down valves.

Public Education - An important aspect of ensuring safety is prevention of accidental damage to the pipeline system by employees, contractors, and outside persons. The six-foot minimum burial depth for the pipeline, nearly twice the usual depth of burial, is one means of reducing the risk of accidental damage, for instance backhoe operation by a landowner. A second means which would be conducted by UPRC is education of employees, contractors, landowners and other persons living near the system. UPRC would instruct personnel and contractors and personally contact each local residence or business near the system to inform them of the location of the pipeline, H_2S hazards, and procedures to be followed to prevent accidents. Additionally, the right-of-way and any intersections with other underground utility, drain, or service lines would be signed and marked to indicate the presence of the WGS buried pipelines. All above ground facilities would also be signed appropriately and fenced and locked to prevent public access. UPRC advocates use of a "one call" system whereby prior to initiation of trenching, backhoe operation, or other deep digging, a company or individual can call one local phone number to learn the exact location of area pipelines, water and other utility lines, buried phone lines, and learn where or where not to dig.

Emergency Response Procedures - UPRC's operating philosophy for the Wahsatch Gathering System puts safety first. It is UPRC's policy to provide a safe and healthful working environment for all employees as well as to protect the public and environment from exposure to unacceptable risk. To ensure that this objective is attained, safety has priority over every other consideration. The previously described project design components demonstrate this priority. While a major gas leak or other emergency event is not probable, it is possible. Therefore, it is vital that project planning and coordination with the local community anticipate and prepare for an event which could pose a health and safety threat to workers or the public.

An emergency response plan will be prepared in close cooperation with the City of Evanston, Uinta County, Summit and Rich Counties, the Utah Department of Transportation, and the BLM. The plan will meet U.S. Department of the Interior requirements for a Public Protection Plan as specified in Onshore Oil and Gas Order No. 6.

Onshore Oil and Gas Order No. 6 requires preparation of a public protection plan whenever the potential H_2S 100 ppm radius of exposure includes an occupied residence, school, church, business or other areas frequented by the public. Appendix I includes an isopleth map displaying the potential worst case 100 ppm H_2S concentration parameters. Public protection/emergency response planning would include at a minimum the areas within the parameter which are regularly frequented by people. On shore Order No. 6 also requires preparation of a public protection plan including areas regularly frequented by people which may experience sustained ambient concentrations of SO_2 of 2 ppm due to flaring of gas at a wellsite during workover operations. The Order requires use of SO_2 detection equipment in the flare impact area. Air dispersion modelling conducted for this project indicates that SO_2 concentrations of 2 ppm would not be experienced at ground level at the Wahsatch Flare Site, the Wahsatch Delivery Facility flare, or flares at the wellsites.

The public protection plan will provide for the necessary actions which may be required to safeguard employees and the public from a release of sour gas or other emergency conditions such as fires or incidents resulting from natural hazards. UPRC has retained consultants who are experts in emergency response planning, training, and procedures to assist in plan preparation.

UPRC and its consultant will work with local fire, police, and other emergency planning officials to develop an integrated protocol and process with specifically designated responsibilities and functions for each type of potential event associated

with this project. This process will include cooperative evaluations of the response and rescue capabilities of the local community infrastructure and UPRC, determining what levels of capability may be required, and exploring a workable response relationship between UPRC and the community. A training program and briefing materials will be prepared and provided for UPRC employees and local emergency services which address rescue, protection-in-place, and evacuation goals and objectives. Briefings will be provided to potentially affected members of the public on potential hazards of H_2S and SO_2 and on the response plan. Emergency response exercises will be conducted with local emergency services in which plan procedures will be implemented in response to a hypothetical accident. The mock drill will help participants to understand their responsibilities in the case of a real emergency and test plan efficiency and effectiveness.

Four objectives will be considered in developing the response plan: 1). Safety of the public and employees; 2) environmental protection; 3) protection of public and company property; and, 4) prevention of interruption of business and public services such as highway access, water and utilities. While all four objectives are important, safety will always remain the first and highest priority. The response plan will include a unified incident command system and organization and provide procedures and specific instructions for alerting and notifying operators, responders, the affected public, and other agencies in the event of an emergency, monitoring concentrations of H_2S and/or SO_2 in the case of a sour gas release, and for protecting life and property. An approved emergency response plan will be in place prior to recompletion and testing of the Urroz #1 well in late summer 1992. The plan will undergo a cooperative review and formal update annually to assure that all components including contact names, phone numbers, and addresses are current.

GATHERING SYSTEM OPERATIONAL PLAN SUMMARY

A detailed operation plan will be prepared by UPRC which sets forth daily, regular, and/or periodic duties and procedures to operate the system in compliance with all local, state, federal, industry, and corporate regulations and guidelines. The plan will establish personnel functions and responsibilities; recording and reporting requirements and procedures; inspection, maintenance, and testing schedules and procedures; system monitoring and control parameters, functions, and procedures; directions to emergency response procedures; protocols for communications among corporate, operational, regulatory, and local governmental entities; and such other schedules, responsibilities, and procedures necessary to maintain system efficiency and safety.

Upon completion of the gathering system, UPRC will commence production from the Fawcett & Sons, Urroz, Urroz B-1, Celsius 4-36, Bradbury, and Harry Moon wells. Gas will be delivered through the gathering system pipelines to the Wahsatch Delivery Facility where gas and liquids will be separated and delivered to the Whitney Canyon Processing Plant. UPRC would be the operator of all but the Celsius well which would be operated by Celsius Energy Corporation in cooperation with UPRC. Production and gathering system operations would locally be directed from UPRC's operating office in Evanston, Wyoming. Communication would be maintained with Amoco Production Company's Whitney Canyon Processing Plant operating office.

Multiphase flow meters would record production from each well. At the Wahsatch Delivery Facility, gas, condensate, and water components of the combined well stream would be separated and measured. The total well stream will be allocated back to the individual wells. It is intended to sell all marketable production components including natural gas liquids, sulfur, condensate, and residue gas. All produced water from the WGS will be reinjected into approved disposal wells at the Whitney Canyon Field.

The gathering system would have the capacity to deliver 64 MMcfd of gas. It is anticipated that initial deliveries would be about 55 MMcfd on an annual basis. These volumes would decline as the field depletes. The pipeline would initially be operated at a pressure of 1600 psig and a maximum allowable operating pressure of 1760 psig. Wellhead and line heaters would maintain a minimum pipeline operating temperature of 95 degrees Fahrenheit to prevent hydrate formation. The pipelines would be pigged periodically to sweep fluids from the lines to a slug catcher at the Wahsatch Delivery Facility.

All components would be subject to regular inspection and maintenance. A majority of the gathering system pipeline would periodically be "smart pigged." The entire system would be subject to other monitoring and testing to detect and respond to any corrosion of materials. Corrosion inhibitor fluids would be regularly injected into the gathering system pipelines. Rates of injection would be based upon observed results of corrosion detection and monitoring activities.

In addition to the monitoring and leak detection systems previously described, the pipeline alignment would be ground patrolled periodically by operating personnel. This would include visual inspections as well as inspections using gas detection equipment. During operation there will be constant communication between personnel in the field and the UPRC control room. Ground patrols will be

performed in a manner to minimize vegetative and soils effects and prevent development of a road scar along the pipeline corridor. All terrain vehicles or snowmobiles may be used for portions of the line when soils are frozen or there is sufficient snow cover. During other periods, patrols may be on foot, horseback, or other nonintrusive means.

Components would be inspected to assure they are operating normally and within design parameters. All wells will be inspected daily. Heaters will be operated by local temperature controls, but can also be operated remotely or locally. They will be inspected weekly. The Wahsatch Delivery Facility will be inspected daily. All periodic inspections required by Department of Transportation pipeline regulations Part 192 will be performed including, but not limited to, the following:

Pipeline patrols - The pipeline right-of-way will be flown periodically. Leak detection equipment will be used to survey the pipeline right-of-way on the ground four times per year at intervals not exceeding five months.

Ambient Gas Monitor Inspections - Ambient gas monitors will be visually inspected and tested monthly. Ambient gas monitors will be calibrated based on manufacturers recommendation and experience of equipment drift.

Valve Site Inspections - Valve sites will be inspected monthly. The valves will be test operated two times per year at intervals not exceeding 7 1/2 months.

Corrosion Monitoring - Coupons will initially be pulled every other month on average. This frequency may be adjusted based on operating experience. Spools will be inspected.

Following any necessary line repair, the repaired section would be pressure tested as required by specifications in DOT pipeline regulations Part 192.

Relief valves and pressure protection equipment would be inspected and tested annually. The ESD system would be tested from the control room at least once annually. Each wellhead subsurface safety valve would be tested at the same level of frequency as required by the U.S. Minerals Management Service's subsurface testing requirements for offshore operations. This testing frequency is more stringent than that typically required for on-shore operations. Consequently, both wellhead surface and subsurface safety valves would be tested monthly.

All UPRC and any contract personnel would be fully trained in all aspects of operation procedures and responsibilities, including emergency response procedures. Public education, as described under Design Safety Aspects, would be an on-going activity over the life of the system with the frequency of specific education programs being determined by the rate of demographic changes in the community and along the pipeline corridor and changes in personnel. Likewise, the emergency response plan would be revised as necessary over the life of the system to reflect changes in local response infrastructures, potential community growth, and/or any changes in the system or advancements in standard emergency response procedures and tools.

Warning signs will be maintained; structures and tanks will be kept painted; rights-of-way will be kept clear of trash and debris and noxious weeds (such as Russian thistle); and the general appearance of all facilities and use areas will be maintained.

At such time that the Kindler Reese, Champlin 375 C-1, or other new discovery wells may be incorporated into the gathering system, the operation plan, public education activities, and emergency response plan will be appropriately amended.

Throughout the life of the project, UPRC would maintain communication with appropriate regulatory authorities including local jurisdictions and the BLM and would provide notification prior to implementation of any significant changes in operating plans and procedures.

PROJECT SCHEDULE

UPRC intends to initiate gas production and delivery to the Whitney Canyon Processing Plant by the end of 1993. UPRC's tentative project schedule realizes this goal while providing time for thorough project planning, environmental and public reviews, permitting activities, component testing and construction. A time flow schedule chart is attached as Appendix K. As indicated by that schedule, some activities will need to occur prior to overall project approval in order to proceed with the project in a timely manner. Implementation would proceed in phases. (1) Recompletion and production test flaring for the Urroz #1 well tentatively in late summer 1992. This is a critical step prior to system construction so that UPRC can determine the integrity of the shut-in wells and provide the assurance that production can be successfully restored. Prior to production test flaring, the Wahsatch Flare System would need to be recommissioned and air emission permits obtained from the State of Utah. (2) Initiation of pipeline and facilities construction in late spring 1993 (construction will be scheduled to avoid critical times and areas for high interest wildlife species). (3) Recompletion and production testing of the Fawcett & sons, Celsius

4-36, Bradbury, Urroz B-1, and Harry Moon wells in late summer/fall of 1993. (4) Facilities start-up and production at the end of 1993. (5) Future recompletion and production testing of the Kindler Reese and Champlin 375 C-1 wells and construction of the Kindler Reese pipeline spur. As noted, actual pipeline construction is not proposed to commence until the late spring of 1993.

MODIFICATIONS TO PRIMARY COMPONENTS OF THE 1984 APPROVED ALTERNATIVE

UPRC has incorporated several changes into the system proposed by Amoco in 1984. The major modifications are as follows:

(1) **Central Facility** - The Central Facility, which was designed as a field compression facility, will not be constructed. Amoco Production Company as operator of the Whitney Canyon Plant, has recently activated Whitney Canyon Inlet compression. This compression startup accomplishes the original objective intended for the Central Facility. The proposed powerline to this site would, therefore, not be needed. Resultant project impacts are further reduced due to the elimination of nitrogen oxide (NOx) emissions, noise, and land use impacts associated with this facility.

(2) **Pipeline Diameter** - The pipeline diameter in the segment from the Urroz junction to Amoco's proposed Central Facility site would be increased from 8 to 10 inches. This would provide improved pigging ability to the Whitney Canyon Plant and increased operational efficiency. The conversion to all 10 inch pipeline from the Urroz Junction to the plant would enable UPRC to more easily "smart pig" this portion of the gathering system.

(3) **Heaters** - The proposed heater design would require the installation of nine line heaters with a maximum capacity of 3 MMBTU/HR each, a heater at each wellhead for an eventual total of eight with a maximum heater capacity of 3 MMBTU/HR each, and a heater/treater at a maximum capacity of 3 MMBTU/HR at the Wahsatch Delivery Facility. 18 heaters would be installed with a total maximum of 54 MMBTU/HR installed capacity. This compares to the 1984 project proposal of 3-5 MMBTU/HR line heaters, seven wellsite heaters at 5 MMBTU/HR, and one 20 MMBTU/HR Central Facility heater (for a design total of 70 MMBTU/HR). With these project changes and the use of low NOx burners, heater nitrogen oxide emissions for the WGS project would be reduced from levels anticipated in the 1984 EA. There is a possibility that sizing of heaters and the number of line heaters may be reduced in the final project design.

(4) **Wahsatch Delivery Facility Area** - The WGS would require the construction of new slug catching, separation, and metering facilities at the Wahsatch Delivery area. Whitney Canyons's existing inlet separation and slug catching facilities are not large enough to accommodate the anticipated liquid slugs that would be generated in the WGS pipeline. Routine pigging operations are necessary to remove liquid from the pipeline network in an effort to retard pipeline corrosion and maintain pipeline integrity. In addition, an emergency flare system will be added at the plant delivery area for depressurizing the line in an emergency.

(5) **Emergency Shut Down Valves** - The project was originally approved on the basis of a total of 37 ESD pipeline valve locations. UPRC's proposal contains 27 ESD pipeline valve locations, but has one additional ESD valve located at each of the nine pipeline heater sites for a total of 36 valves. In addition, four ESD valves will be located on each wellsite: one subsurface ESD, two on the wellhead, and one at the wellsite heater. UPRC has, therefore, included a total of 68 ESD valves in the proposal to automatically shut down the flow of gas.

(6) **Additional Production Well** - One additional existing well has been added for a total of eight wells in the project. The Celsius 4-36 is a shut-in sour gas well on Wyoming state land in the Yellow Creek Deep field located midway between the Urroz B #1 and the Bradbury #1. The original gathering system right-of-way is adjacent to this well location, therefore, no further land use impacts are anticipated.

(7) **Wahsatch Flare Site** - The Wahsatch Flare site, located 3.4 miles southwest of Yellow Creek Deep, would be re-activated to provide remote flaring capacity. The flare site would improve system safety, provide additional flexibility for response to an emergency situation and facilitate operational needs. This facility was not included in the original environmental assessment. The flare line from the wells in Yellow Creek Deep to the flare site is already in place. Pre-operational testing of the existing line will determine whether or not any line replacement or repair is necessary and whether any surface disturbance would be required for use of this system. Any line repair or replacement would be conducted as prescribed under DOT 192 requirements. If surface disturbance were necessary, construction and reclamation activities would follow guidelines established for other project components. Both the Wahsatch Flare and the delivery facility flare would have the capability to depressurize the gathering system within one hour.

(8) **Refined Route Alignment** - Four modifications are made in the gathering system route alignment. The primary change shifts three and one-half miles of the route paralleling the Utah/Wyoming state line west of the Bear River Valley about 2,000 feet west

from Wyoming into Utah to avoid severe rock outcrops, rugged terrain, and deep gullys in Bartlett Hollow. The new alignment parallels the previously approved route. Two and one-half miles of the route change remain on private lands and one mile shifts from private lands to federal lands. The three other modifications to the route alignment are very minor, occur on private lands, and are described on page seven.

GENERAL APPROACH TO PROJECT

Siting, construction and operation of the WGS would be subject to a variety of local, state, and federal laws, regulations, and stipulations which protect natural and human resources. UPRC will incorporate all pertinent BLM standard stipulations for right-of-way grants and for oil and gas development into its proposed action as may be determined by the BLM.

The majority of the impacts of the system would occur during the construction phase. Impacts associated with earth moving, equipment operation, human activity and surface disturbance are unavoidable parts of the construction process. Measures have been incorporated into the project design to minimize the magnitude and duration of these activities, to schedule them to minimize disturbances to important wildlife, and to restore disturbed areas.

Impacts of operation would be minimal, but are unavoidable. The system would be maintained to ensure safety and proper operation. The heaters are an operational necessity to prevent hydrate formation in the system. Inspection, monitoring and maintenance would help avoid any accidental H_2S releases. The risk that these may occur is unavoidable, as are the additional demands on the community infrastructure and land use controls resulting from that risk. Impacts of abandonment at the end of the project life would be beneficial because they would restore and reclaim facilities' sites.

Beyond the specific proposal components reiterated above, UPRC would adhere to the construction and operation procedures, precautions, and stipulations as provided in the 1984 environmental assessment as well as the additional mitigation measures required by the BLM in the 1984 EA. Additionally, UPRC would prepare a new Construction and Operations Plan. The plan would guide specific elements of construction and operation. It would include specific requirements and stipulations required by the BLM in 1984 as well as other requirements identified by the BLM or other jurisdictions during project reviews and permitting and during pre-construction surveys for cultural, threatened and endangered wildlife/plant, or paleontological resources to avoid and/or mitigate potential effects to sensitive resources. The plan would be submitted for review and approval to the BLM and other federal agencies and state and local jurisdictions.

The following subsections describe construction and operational plans, stipulations to protect resources, and other facets of the proposal as described in the 1984 Final EA. Minor modifications have been made in these discussions for purposes of this document, however, additional changes may be needed as implementation progresses.

RESOURCE CONSIDERATIONS

Air, Land and Water Quality - UPRC and its contractors would conduct all project construction, operation, maintenance, and abandonment activities in a manner which would avoid or minimize degradation of air, land, and water quality. All activities would be performed in accordance with applicable air, land, and water quality standards, related facility siting standards, and related plans for implementation.

Emissions of NOx would be experienced from heaters along the pipeline, at the wellsites, and at the delivery facility throughout the operational life of the system. The Wahsatch flare, wellsite flares, and the plant delivery facility flare would produce SO_2 when these flares are used for production testing or in the case of emergency use. Minor fugitive emissions of pipeline gas and H_2S may be experienced at valves throughout the system. Temporary increases in particulate dust emissions would be experienced during construction activities and from increased traffic on dirt roads.

UPRC would comply with construction practices and mitigation measures set forth by parameters of the "nationwide permit" required by Section 404 of the Federal Water Pollution Control Act for the pipeline crossing of the Bear River and its environs. The river crossing is located within 0.25 miles of the historic maximum high water boundary of Woodruff Narrows Reservoir. The spillway on Woodruff Narrows Reservoir was raised in 1980 to an elevation of 6,455 feet. This increase in reservoir capacity has resulted in periodic inundation of the land surface above the proposed pipeline during maximum storage conditions. The pipeline would be buried in the Bear River floodplain in a zone where the land surface ranges between 6,440 and 6,460 feet. Construction would take place during low river flow and low reservoir storage conditions. However, because the reservoir periodically would rise above the pipeline crossing (4,200 linear feet at high water), impacts of construction and operation on both the river and the reservoir must be considered. All other streams traversed by the pipeline have an average annual discharge of less then five cubic feet per second (cfs).

During construction of the crossing, UPRC would excavate and replace fill materials in the Bear River channel at low river flow and low reservoir storage conditions using the following control guidelines:

Excavated material would be free from toxic pollutants, in other than trace quantities;

The fill created by the excavation would be properly maintained to prevent erosion and other nonpoint sources of pollution;

Excavation would not restrict or impede movement of aquatic species indigenous to the river or the passage of normal or expected high flows or cause relocation of the water;

Streams, wetlands, and riparian areas disturbed during construction would be restored to pre-project conditions;

Placing fill material into breeding and nesting areas for migratory waterfowl would be avoided; and,

Temporary fills, if necessary, would be removed in their entirety.

Recreational Resources - Project construction would occur during late spring through early fall months when tourist and recreational traffic is high in western Wyoming. There would be no effect to traffic on I-80 or Utah State Highway 16. For these highways, the pipe would be placed in bores beneath the roadways. For other roads, there would be no interference with traffic on weekends or holidays. Where ditching and construction crosses these roads temporary detours, signed alternative routing, or temporary bridges would maintain public access on weekdays throughout the construction period.

Visual Resources - UPRC is committed to concerted efforts to protect the scenic value of construction areas and adjacent lands. All above-ground improvements and barricades would be nonreflective. With the exception of components needing to be painted safety colors, facilities would be painted to blend with the natural background as specified by the BLM. The Bear River Valley to below Woodruff Reservoir and the U.S. 89 corridor to the Utah State line has been identified as a BLM Visual Resource Management Class II area.

Cultural Resources - Amoco Production Company completed a Class III cultural resources survey in 1982 for the northern portion of the originally proposed pipeline route which crosses mixed federal, state, and private lands. The 1982 final cultural resources report also included analysis of the portion of the Mormon Pioneer Trail in the vicinity of the Cave Creek field. Subsequent to the 1982 surveys, the portion of the route paralleling the Bear River Valley was moved farther west. This segment of the route granted a BLM right-of-way in 1984 and now proposed by UPRC was not subject to a Class III cultural resources survey.

In cooperation with the BLM, UPRC will determine where cultural surveys need to be conducted. The surveys will be performed by a qualified archeologist approved by the BLM. Should findings of these surveys warrant, appropriate cultural resource measures will be determined. Otherwise, UPRC will comply with measures agreed to by Amoco in 1984 to prevent significant impacts to cultural resources. UPRC would monitor pipeline construction across the Bear River Valley, between the lower terraces. This one-mile segment may contain buried archaeological sites or sites not visible due to dense floodplain vegetation. Monitoring of this segment would ensure that any significant sites are not inadvertently destroyed.

The following additional measures would be taken during construction to avoid adverse impacts to the Mormon Pioneer Trail:

Pipeline construction activities would be confined to the 100-foot right-of-way along the mapped alignment, avoiding visible trail remnants;

Visible trail remnants in the general area would be preserved from direct or indirect impacts of construction, such as vehicular traffic, etc.

Fish and Wildlife Protection - UPRC would abide by mitigation measures incorporated in 1984 by Amoco to reduce adverse impacts to fish and wildlife. UPRC would also incorporate into its Construction and Operations Plan additional mitigation measures applicable to current wildlife distribution and use areas. These additional mitigation measures would be prepared and implemented in cooperation with the BLM, U.S. Fish and Wildlife Service, the Utah Division of Wildlife Resources, and the Wyoming Game and Fish Department. A survey of black-footed ferret and other threatened or endangered species which potentially could be found within the project area would be conducted within 180 days prior to initiation of construction. If evidence of a threatened or endangered species were found, the U.S. Fish and Wildlife Service and the appropriate state wildlife agency would be contacted immediately. Every effort

would be made to avoid having an impact on these species and unavoidable effects would be mitigated according to direction from the appropriate authorities. A survey would also be conducted for active bald eagle, peregrine falcon, or other raptor nests.

Construction in sensitive wildlife habitats would be scheduled to avoid critical seasons of wildlife use. The Kemmerer Area Resource Management Plan and the wildlife management policies of the Bear River Resource Area differ slightly in terms of area and periods of construction avoidance to protect high interest species. Guidelines and stipulations for both areas are listed below for the various species which may be found within the vicinity of the project area. It is likely that the Utah and Wyoming BLM, U.S. Fish and Wildlife Service, and State wildlife management agencies, would be able to establish uniform dates and areas of avoidance for application to this project since it involves several jurisdictions. Such dates and areas would be included in the Construction and Operations Plan and referenced in the right-of-way grant stipulations.

Times and areas of habitat avoidance in the BLM Kemmerer Resource Area - Under the Kemmerer Area Resource Management Plan, construction activity would be avoided within 3/4 mile of raptor nests between February 1 and July 31 and for bald eagle and peregrine falcon from February 1 through August 15; mule deer crucial winter range use period, November 15 - April 30; waterfowl and waterbird nesting period, March 15 - June 15; sage grouse strutting and nesting period, avoidance of construction within 1/4 mile of a sage grouse lek center, March 15 - May 31; and Bear River high flow (spring fish spawning) period. A brown trout population also spawns from mid-October to 1 December.

Times and areas of habitat avoidance in the Bear River Resource Area - The period and area for construction avoidance for raptor nesting areas is 0.5 miles from March 1 through July 15 and for owls, February 16 through July 15. For critical bald eagle habitat, the Bear River Resource Area requires construction avoidance from November 15 to March 15. Other times and areas of construction avoidance include: mule deer, elk, pronghorn, and moose crucial winter range, December 1 to April 15; a radius of two miles around sage grouse strutting ground for protection of sage grouse breeding and nesting habitat, March 1 through June 15 (additionally, no disturbance of the strutting ground); sage grouse crucial winter habitat, December 1 to February 28; and no construction activity at any time which might result in destruction of all or any part of a white-tailed prairie dog town.

For some of these dates and areas, specific exceptions can be granted by the BLM if the proposed activity will not seriously disturb the wildlife or habitat values being protected.

Other mitigation measures include:

Vegetation clearance would be limited to those areas absolutely required for safe construction;

Disturbance of riparian vegetation would be minimized;

For the portion of the project within the Bear River Resource Area, the following avoidance dates would be observed:

Planning access points to limit human disturbance in important wildlife areas;

Reshaping disturbed surfaces to natural contours;

Implementing revegetation efforts which include seeding of desirable native plants;

Construction of runoff detention and sediment storage devices to prevent runoff from disturbed areas entering streams;

Construction of vehicle barriers (dirt or rock piles) to limit access to the right-of-way; and,

Prohibit workers from carrying firearms on site during construction, operation, and maintenance.

In addition, UPRC would conduct off-site habitat enhancements within the mule deer crucial winter range on an acre for acre basis to compensate for temporary loss of habitat forage within the range from this project. UPRC would cooperate with the BLM, the Utah Division of Wildlife Resources, and the Wyoming Game and Fish Department for determination of appropriate measures and their implementation.

Use of wildlife ranges within and adjacent to the project area may vary over time with changes in weather patterns and snow accumulations in the high country. In the early 1980's high snow accumulations forced larger numbers of big game animals

to lower elevations for wintering. More elk, deer, and antelope now winter in eastern Rich County, Utah than prior to preparation of the 1984 EA. A mule deer crucial winter range has now been delineated which parallels the Bear River Valley to the west. Also, the mule deer crucial winter range in the Bear River Divide has expanded since 1984 toward the Bear River Valley. Additional information is also now available for other high interest species. Appendix N contains current wildlife use area maps for the project area and current information on wildlife and wildlife habitat in Rich and Summit Counties, Utah.

The wildlife maps in Appendix N display the current important ranges for high interest species in the study area. The maps display important ranges within or adjacent to the project area for mule deer, elk, and moose; use areas for waterfowl and the sandhill crane; and locations of prairie dog towns and sage grouse breeding complexes. A bald eagle high use/foraging area along the Utah/Wyoming state line is not separately displayed on the maps but is delineated as occupying the same use area as the crucial deer winter range west of the Bear River Valley.

Since wildlife use areas have changed since 1984, mitigation measures and times identified for seasonal avoidance will be applied to additional portions of the pipeline (note maps in Appendix N). Construction and activity schedules will be modified to comply with these changes and to minimize effects in these areas.

In the event of an accidental H_2S release into the Bear River and Woodruff Narrows Reservoir, UPRC would take complete responsibility for restoring the fishery. UPRC would consult with the BLM and Wyoming Game and Fish Department to outline appropriate stocking techniques and rates.

Biocide/Pesticide Use - Pesticides would not be utilized for insect or rodent control during routine construction, operation, maintenance, or abandonment. An EPA approved herbicide may be used along fences to prevent weed fires and at safety signs within the right-of-way to keep them visible. Biocides would not be stored on public lands. If emergency pesticide use were necessary, application on public land would occur only after prior approval by the BLM. Biocide use on private land would require the consent of the landowner or tenant.

Livestock Operations - Functional use of all livestock operations and other public improvements would be maintained at all times. UPRC's construction contractor would install an adequate temporary gate in every functional fence traversed by the right-of-way easement. Openings would not exceed the width of the construction

right-of-way (100 feet). Prior to cutting fences, posts would be securely braced. Care would be taken to preserve the tautness of all fences; woven wire fencing would be rolled back using a maximum of one cut, if the fencing cannot be taken apart at an existing splice.

The span of wire in the temporary gate would be supported and separated by wire stays. Gates would be provided with fasteners which would permit one person to open and close the gate while maintaining the tautness. Gates would be adequate to prevent the passage of livestock and would be kept closed at all times except for the passage of workers and equipment. All livestock would be prevented from entering or leaving and, if necessary, a watchman would be posted during working hours to assure that no livestock escape. All gates would be maintained in good condition until fences are permanently repaired. Fences would be reconstructed in a condition equal to or better than the original condition (or to the landowner's satisfaction.) If a natural barrier used for livestock were damaged during construction, the area would be adequately fenced to prevent the escape of livestock. No gates on established roads over public lands would be locked, blocked, or closed. Any cattle guards, gates, etc., damaged by UPRC would be repaired to their original condition or replaced.

A dirt ramp would be left in open trenches at intervals specified by the responsible authority to allow livestock an escape route, should they fall into the trench.

Public Monuments and Markers - Where cadastral survey monuments and markers are located on the right-of-way or surface facility sites, UPRC would avoid disturbance or removal of such monuments or markers to the extent possible. If removal were necessary during construction activities, the appropriate agency would be advised. UPRC would then secure the services of a registered land surveyor to survey and to restore or replace the damaged monuments and record such a survey in the appropriate county and BLM office.

Pipelines, Telephone Conduits, and Other Underground Structures - UPRC's contractor would be responsible for locating pipelines, telephone conduits, and other underground structures, and would take precautions to avoid damaging these facilities. The contractor would be responsible for notifying pipeline, telephone, power, and other companies or agencies who have structures above or below ground across the construction route (or near enough to the construction route that there could be damage during construction) enough time in advance of construction to allow them to have a representative present during construction.

CONSTRUCTION

Construction of the WGS is scheduled for late spring through fall 1993. Before beginning construction, UPRC would have had BLM reconfirmation of the BLM right-of-way grant, and obtained right-of-way easements across private lands, and other required permits. BLM right-of-way stipulations and any special requirements negotiated by private landowners would be incorporated into an operational plan which provides detailed specifications on construction methods and engineering design.

Preconstruction conferences would be held with the BLM and private landowners to clarify procedures and expectations to enable efficient implementation of the requirements of the operational plan. Compliance checks would be made throughout construction to assure compliance with the terms of the BLM right-of-way grant, private landowners easements, and other permit requirements.

UPRC would secure the services of a private contractor to construct all components of the gathering system. UPRC would issue to the contractor detailed construction specifications and all necessary permits and approvals. Construction procedures would be as outlined in the following sections.

Construction Crew - The construction crew would consist of an average of about 125 skilled and unskilled workers. A portion of the workforce would be hired locally. The construction contractor would be instructed that none of his employees would be allowed to live in unpermitted camping areas.

Landowner Notification - Landowners, permittees, and other regular users and developers of public lands in the right-of-way would be notified in advance of construction activities which could affect their businesses or operations. Notification to landowners would be given by mail. Local permittees and tenants would be notified in person a few days ahead of construction. Other notification would be made by various means, including placing signs at temporary road closures in advance of construction. Ranchers would be advised of any fence openings, disturbance of range improvements, or other range-use related structures in advance of construction.

Access and Construction Roads - The right of ingress to and egress from the right-of-way would generally be limited to points where the right-of-way intersects public roads. Arrangements may be necessary for other access, use of existing privately owned roads, construction of temporary roads on private lands, or building of bypass roads because of adverse terrain. UPRC would obtain written agreement from the

landowner or BLM for such access. During construction, UPRC would regulate access and vehicular traffic as necessary to protect the public, wildlife, and livestock from hazards associated with construction. Selection of heater locations considered existing access to minimize the length and necessity of use of new access roads after the construction phase. In those cases where new temporary or long-term access roads are necessary, roads would be built to specifications contained in the BLM *Road Standards Manual*, Section 9113. For long-term use, short distance access roads, single lane local roads with a subgrade width of 17 feet and a surface width of 14 feet with graveled surface would be constructed. Topsoil removed during road construction would be placed in elongated rows within the road right-of-way and seeded to prevent erosion. Temporary use construction access roads would be reclaimed and revegetated as soon as possible after construction is completed.

Keeping the Right-of-Way Clean - In the performance of the work, UPRC would require its contractor to arrange the maintenance and servicing of equipment to avoid damage to the right-of-way and adjacent properties. Oil drained from equipment would not be permitted to spill on the ground. All waste oil, containers, skids, scrap pipe cuttings, welding electrodes, and other refuse would be removed from the right-of-way and disposed of in an approved manner.

Warning Signs and Flares at Road Crossings - UPRC's contractor would comply with all appropriate city, county, and/or state regulations requiring placement of warning signals and flares. In the absence of such regulations, the contractor would place warning signs, visible during daylight, and warning lights, visible during darkness, in both directions of traffic. Signs would be located a minimum of 500 feet from pipeline crossings. Battery operated warning lights would be set on each side of such road crossings immediately adjacent thereto. Warning signs would be readable at 100 feet.

Right-of-Way Staking - The contractor would place slope stakes, culvert location and grade stakes, or other stakes necessary to ensure construction of the gathering system in accordance with all technical information submitted in the right-of-way grant application. If the stakes are disturbed for any reason prior to or during clearing or topsoil removal, they would be replaced before proceeding with construction of the pipeline.

Before clearing and grading the right-of-way, the contractor would move all survey stakes back to the edge of the right-of-way and preserve them during all phases of construction. Staking intervals would be 100 feet to identify clearly the outside

perimeter of the corridor. After the right-of-way is complete and the pipeline covered, UPRC would provide a centerline survey of the installed pipeline location.

Clearing the Right-of-Way - Construction activity would be confined to a 100-foot right-of-way and only the portion of the right-of-way necessary for safe construction would be cleared. The right-of-way would be cleared of boulders, rocks, trees, shrubs, grass, weeds, crops, or other obstacles as necessary for the construction of the gathering system. Top soil will be scalped from the side of the right-of-way which will be primarily used by construction machinery and vehicles. The top soil will be stored in the right-of-way for replacement after construction. This will protect the virgin soils on the working side of the right-of-way from being pulverized by construction traffic. All clearing work would be completed without mixing topsoil with extremely coarse vegetative materials. All stumps of felled trees would be removed for a minimum distance of 10 feet on each side of the ditch center line. Remaining stumps would not project more than 4 inches above the ground. Trees, stumps, and brush would not be pushed or piled off the right-of-way. Brush and other debris would not be shoved into piles with dirt. After the final cleanup, brush will be spread in the right-of-way to provide additional wildlife habitat and to encourage shrub reestablishment.

Grading of the Right-of-Way - The right-of-way would be graded such that no sharp overbends or sags are required when the ditch is constructed. Grading would also be required on side slopes to provide a level surface 35 to 50 feet wide for operation of machinery. Grading would always be performed in such a manner as to minimize interference with existing natural drainage and slope stability, and to ensure that topsoil is reapplied to the surface of the cut. Drainage intercept trenches would be excavated along the tops of cuts to restrict surface runoff away from the disturbed areas. Where terraces or diversion dams are cut, openings would be maintained only as long as necessary to complete construction. All grading would be finished to maintain the original drainage pattern and flow conditions, unless special construction techniques are required, and would comply with regulatory restrictions. Excavation and grading may be performed to increase the stability and decrease the gradient of unstable slopes.

At the Bear River crossing an area approximately 200 feet (river front) by 200 feet (0.9 acres) would be needed on each side of the river. No vegetation clearing or soil disturbance would be required on this site. An effort would be made to keep the size of these areas to a minimum and to locate them to reduce disruption of the river banks. Construction technology would be employed that allows migrating fish to

move past construction activities and which minimizes turbidity. At the river crossing the pipeline would be weighted with concrete, would be placed a minimum of six feet below the bottom of the streambed, and pipeline crossing markers would be placed at the river's edge.

An area 200 feet by 200 feet (0.9 acres) would be needed for each side of road and railroad crossings. Additional storage areas for equipment, pipe, and other materials would be acquired through private permission or temporary use permits. Generally, these areas would not be on or adjacent to the right-of-way. For pipeline crossing of Interstate 80 and Utah State Highway 16, horizontal bores would be drilled from a point outside of the established highway right-of-way and a series of caissons would be inserted into the bore. There would be one bore at each of these crossings which would contain the sour gas pipeline and the fuel gas pipeline. Pipe within the bore would have the external radius coated with concrete.

UPRC would install conduits, as necessary, to maintain natural drainage when constructing temporary fills for passage of equipment. Such conduits would be maintained to allow drainage and to protect against damage on adjacent properties. Where the alignment would traverse Morris Ditch, temporary dikes may be constructed to hold water back from adjacent properties, if necessary.

UPRC's contractor would place excavated material in piles in order that it may be replaced in its original position. This material would not be scattered along the right-of-way or placed in low areas. Materials removed from stream banks would not be placed in stream beds.

Ditching - The contractor would excavate the ditch along the staked line established by UPRC. The finished ditch would be free of rocks, hard clods, stumps, roots, or other debris which could injure the coating when the pipe is lowered into the ditch. All tree roots would be cut flush with the side wall and bottom of the ditch to prevent contact with the pipe. The bottom of the ditch would be graded and dressed.

UPRC's contractor would excavate the ditch to minimize the number of bends required to lay the pipe. This would be accomplished by cutting the ditch slightly deeper at the crest of ridges and gradually cutting the ditch deeper in approaches to road crossings, terraces, watercourses, etc. At such locations, the ditching machine would be operated at various depths rather than grading the ditch by other means. Where over bends or side bends are required, the ditch would be excavated to provide proper clearance between the inside bend of the pipe and the bottom or side of the

ditch. The gathering system would be buried at a minimum ground cover depth of six feet. Vegetation and other foreign materials would not be mixed with soil used to backfill the trench. Topsoil would be segregated from subsoil during excavation, and would be stored in separate areas along the trench.

Where necessary to prevent damage to the coating, UPRC's contractor would place pads of loose soft earth, free of clods and rocks, about two feet long for a sufficient height in the ditch so that the bottom of the pipe would be a minimum of four inches above the bottom of the ditch throughout the suspended lengths. Topsoil would not be used for padding material. In lieu of the dirt pads, the contractor may place Rock Shield or sand-filled bags in the ditch, particularly where rock is encountered at crossing of water courses.

Earth, sand, loose or broken rock, rock mixed with earthen materials, and soft rock such as caliche, all of which can be removed with mechanical ditch-excavating machinery, is classified as normal excavation. Mechanical ditch-excavating machinery would include wheel-type ditchers, backhoes, draglines, rooters, rockplows, rippers, and similar type equipment. Rock excavation is defined as solid rock which must first be broken up by means of drilling and blasting, or by pavement breakers, before excavation can be accomplished. The contractor would use all practical means of excavation with mechanical ditch-excavating equipment before resorting to drilling and blasting, unless it is obvious that rock excavation is required.

Prior to any blasting, UPRC would obtain necessary permits and notify regulatory authorities as well as occupants of nearby buildings, stores, houses, or places of business. Ranchers would be notified in sufficient time to protect property and/or livestock. In performing blasting operations, UPRC would employ personnel who are qualified and experienced in explosives handling. The contractor would excavate to obtain only the depth of ditch required and would blanket the ditch with spoil or blasting mats to contain the blast. If rock removed during blasting were scattered over the right-of-way or adjacent property, UPRC would clean up the rock, haul it from the premises, or bury it to the satisfaction of the landowner. UPRC would use extra precautions in blasting near telephone, telegraph, or electrical conduits, water lines, water wells, springs, pipelines, and other underground structures.

Where drain tile is encountered, the contractor would dig the ditch so that the pipeline would be laid over or under such tile with a minimum clearance of four inches. When any active draintile is damaged, cut, or removed, it would be repaired immediately in such manner that the drain tile can function properly. In ditching

creeks, rivers, ravines, and other water courses, a minimum cover of six feet between the top of the pipe and the bottom of the water course would be maintained.

A maximum of seven miles of open trench may occur during construction. When the ditch is excavated through lands where livestock is confined or through cultivated fields where it is desirable for the landowner or tenant to have a passageway across the ditch, the contractor would provide safe, temporary bridges or leave dirt ramps for crossing the ditch wherever necessary as determined by the authorized officer or landowner. In cultivated fields, it may be necessary for gaps or openings to be cut in the spoil bank so that excessive rains would not cause water to back up and flood the area. Where considered necessary, the contractor would pipe across the ditch or take other measures to prevent the ditch from being filled with water. Extreme care would be exercised in keeping all drainage ditches and watercourses open and useful. Where rock is encountered, soil cover would be stripped from the surface of the rock, kept separate from the excavated rock, and preserved for replacement as topsoil.

Segregated topsoil would be replaced in the ditch in its original relative position. Any surplus subsoil or rock that cannot be returned to the ditch would be hauled away and disposed of in an approved manner.

Lowering, Backfilling, and Clean-up - No pipe would be lowered until the ditch is free from loose rocks, hard clods, roots, or debris which could damage the coating. Where coating is field applied, the pipeline would be lowered into the ditch immediately behind the coating and wrapping machine, wherever practicable.

Necessary slack in the pipeline would be obtained by lowering sections into the ditch while alternative sections are held above the ditch on skids. Slack loops would be held up only as necessary to obtain proper fit or bends in the ditch, and prevent pushing the pipeline ahead. After the necessary backfilling has been done to hold bends in their proper position, slack loops would be lowered.

On hillsides or sloping ground, two or more 1-cubic foot, earth-filled bags would be placed in the bottom of the ditch before the pipeline is lowered in position. Before backfilling the ditch, additional earth-filled bags would be placed on and around the pipeline to form a retard. The retard would be built slightly higher than the surface of the ground to prevent water flow in the bottom of the backfilled ditch.

Backfilling would be performed by means of a backfill machine. No foreign substance, including skids, welding rods, containers, brush, trees, or refuse of any

kind, would be permitted in the backfill. Earth, sand, or other soft and loose materials that do not contain rocks or hard clods would be backfilled directly on the coated pipe. After the ditch has been filled to the level of the surrounding ground, one tread of a tractor would be run over the ditch to pack and lower the backfill. After this is completed, the remaining spoil would be spread over the ditch and topsoil would be reapplied.

Ditches excavated in loose or solid rock would be backfilled in a manner that does not damage the pipe or coating. No rocks, hard clods, or other hard objects would be placed on the coated pipe. The pipe would be covered with soft earth or Rock Shield before any rocks or hard objects are placed in the ditch. After the pipe is covered by the layer of padding, the remainder of the spoil would be placed in the ditch provided that any rock that would interfere with plowing and cultivation would not be allowed in the ditch. Dirt would be hauled in if necessary to fill the ditch.

Packing of backfill by use of a tractor tread would not be done where the coating might be injured or in locations where draintile might be damaged. In these areas, tractors or other machinery would not be permitted to pass over the backfilled ditch. As soon as backfill is completed, the right-of-way would be cleared of all waste materials, debris, and rocks. Rocks would be returned to the right-of-way if the original land surface was rocky. All holes and ruts would be filled and smoothed and the land would be restored to its preconstruction condition. All temporary fills and conduits would be removed and the area cleaned up.

Disturbed stream banks would be restored and protected from erosion as may be directed by the land management agency or other appropriate agencies. Likewise, the disturbed streambed would be restored as much as possible including the replacement of micro-habitat features such as boulders.

Cultivated areas would be tilled by discing, harrowing, cultipacking, or similar methods. Land under cultivation, subject to soil compactions, would be plowed to a depth of 10 inches, except directly over shallow drain tile or other underground structures.

Pressure Testing - As described under Design Safety Aspects, once the pipe is in place the integrity of the system would be tested to locate any leaks or weak spots. Such a test would comply with appropriate regulations. If water were used for the test medium, the test would comply with any stipulations of the Wyoming or Utah State Engineer's Temporary Use Permit. The system would be pressure tested at 1.5 times

the maximum operating pressure if water is the test medium. Alternatively, nitrogen may be used as the test medium at 1.15 times the maximum operating pressure. If nitrogen is utilized, it would be released to the atmosphere in a gaseous state after the test. Water, however, would be reused to test as many sections of the system as feasible. The testing procedures do not contaminate the water although small amounts of soil and metal fragments may be entrained. Sites for introducing water, removing water, and the site where any leaks are corrected would be restored in the same manner as the rest of the right-of-way. Refuse water would be disposed of in accordance with appropriate permit requirements. The Bear River is the most likely source of hydrostatic test water with a maximum of 2.6 acre-feet being required.

RECLAMATION

UPRC would reclaim disturbed areas in accordance with BLM stipulations in the right-of-way grant. These procedures would also apply to private lands unless otherwise specified by the landowner. Objectives for reclamation efforts are: 1) stabilization through establishment of ground cover; 2) establishment of vegetation consistent with land use and wildlife planning; and 3) reduction of visual contrast. Reclamation would be initiated as soon as possible after disturbance occurs and continued efforts would be pursued until satisfactory vegetation cover is established and the site is stabilized.

Detailed stipulations would be included in the right-of-way grant and the Construction and Operations Plan. Measures which may be included are:

Soil handling techniques during construction, including segregation of topsoil and storage in a manner to reduce impacts to soil microorganisms

Restoration of original surface contour

Compaction of backfill (not to extend above the original ground level after the fill has settled)

Construction of erosion control devices such as waterbars, terraces, and use of mulching will be required to minimize erosion

Use of mulch which is free of mold, fungi, or noxious weed seeds

Control of noxious weed infestations on disturbed surfaces with control measures complying with BLM guidance

Seed-bed preparation including scarification of restored surfaces, reapplication of topsoil, and application and discing of mulch prior to seeding.

Use of plant species adaptable to the local soils and climate conditions. Final seed mix formulation will be reviewed with the BLM, Wyoming Game and Fish Department, and Utah Division of Wildlife Resources. Drill seeding to be used where possible. Where drilling is not feasible, seed would be broadcast at twice the drilling rate and the seeded area would be raked or chained to cover the seed. Shrub clusters (transplanted containerized plants) may be required for disturbed areas within the mule deer crucial winter range area. Followup seeding and/or corrective erosion control measures would be pursued where initial measures did not succeed. Seeding would be repeated until a satisfactory stand, as determined by the BLM or landowner, is obtained. The 1984 EA provided for the following seed mix and drill rates. These may change based upon reviews with the BLM, Utah Division of Wildlife Resources, Wyoming Game and Fish Department, and private landowners.

Annual rye (Lolium multiflorum)	10 lbs/acre
Thickspike wheatgrass (Agropyron dasystachum)	4 lbs/acre
Western wheatgrass (Agropyron smithii)	6 lbs/acre
Indian ricegrass (Oryzopsis hymenoides)	5 lbs/acre
Western yarrow (Achillea millefolium)	3 lbs/acre

Maintenance and Weed Control - Maintenance and control of the right-of-way vegetative cover would be minimal. No mechanical or chemical maintenance of the right-of-way would be allowed in riparian vegetation at the Bear River crossing. The right-of-way would not be mowed; however, mechanical methods (mowing, discing) or use of herbicides approved by the Environmental Protection Agency may be utilized to control vegetation at surface structures (ESD valves, heaters, warning signs, fences, etc.).

In the event that a weed problem develops, UPRC would be responsible for weed control as specified by state law. UPRC would consult with local county weed and pest control supervisors for the most appropriate control measures.

Compliance Check and Monitoring - When development and rehabilitation have been completed, a final joint compliance check of the right-of-way would be made by UPRC, the BLM authorized officer (or designated representative), and landowners. The purpose of this check would be to determine compliance with the terms and conditions of the right-of-way grant. UPRC would perform required monitoring, modifications, or additional reclamation work needed to comply with the terms and conditions of the right-of-way grant.

INSPECTION AND MONITORING

Wellhead production areas and the delivery facility would be inspected and maintained daily. Emergency shut down valve locations would be inspected and H_2S monitors tested monthly. Routine pipeline inspection would be conducted both on the ground and from the air.

ABANDONMENT

Abandonment plans are uncertain. The gathering system could be converted to carry sweet gas after the 20-year project life, it may be possible that additional sour gas discoveries could be made extending the initial use and life of the system, or the facilities may be abandoned. Once abandoned, all surface facilities would be dismantled and the disturbed areas revegetated. The pipeline would be left in place, although emergency shut down valves and heaters would be removed. All sour gas in the line would be removed.

ADDITIONAL MITIGATION MEASURES

The project proposal as described in the 1984 Final EA (and as restated with some modifications above) included mitigation measures associated with construction and routine operation which were recommended during the EA analysis process. Additional mitigation measures were also listed in the Chapter on Environmental Consequences. They follow.

MONITORING

"In addition to the mitigating measures described in Chapter 1 of the FEA, the applicant and BLM would implement monitoring of procedures to:

determine if planning decisions, mitigation, and/or stipulations derived from the EA are producing desired results,

discover, document, and mitigate unanticipated and/or unpredictable effects, and communicate with affected interests.

"Monitoring procedures are described in Chapter 1 of the FEA. A list of monitoring procedures is presented below.

The applicant would continuously monitor the gathering system to detect any leaks or pressure changes in the system. This would be accomplished with an automated monitoring system.

The applicant would inspect and maintain the central facility[2] and wellhead production areas daily. Block (ESD) valve locations would be inspected and H_2S monitors calibrated every month. Routine aerial pipeline inspection would be conducted as needed.

In the event of a sour gas release, the applicant would monitor the extent of loss of vegetation, wildlife, or fisheries.

BLM would require the applicant to monitor all disturbed areas and perform the necessary maintenance of slopes, water bars, and other erosion control measures.

BLM and the applicant would monitor the success of revegetation measures including efforts to restore wildlife habitats.

The applicant would monitor pipeline construction in the Bear River Valley to identify and protect cultural resources that could be encountered during construction. Monitoring would be conducted according to a BLM approved cultural resources management plan."

[2] The central facility is no longer a proposal component.

PUBLIC INVOLVEMENT PROCESSES

UPRC will cooperate with all affected jurisdictions and the general public in providing information on the WGS proposal and in responding to comments, concerns, or questions. Public involvement processes will include those meetings and activities conducted by UPRC and UPRC cooperation with and participation in public meetings and/or hearings conducted by governmental agencies. UPRC will respond to all requests for information and be prepared to meet with individuals and organizations or groups.

UPRC has prepared a public involvement plan which has five primary components: (1) preliminary meetings with representatives of involved agencies and governments; (2) appearances before public meetings of local permitting and regulatory commissions, councils, and agencies; (3) meetings with the general public; (4) on-going meetings and distribution of information including meetings with civic organizations, other groups, and individuals; and (4) cooperation with and participation in public meetings conducted through the permitting and regulatory processes of affected agencies. The draft public involvement plan is attached as Appendix L.

In meetings with the general public, UPRC intends to invite local citizens to meetings within the community to discuss the project proposal in an open dialogue affording citizens the opportunity to ask questions and become fully familiar with what is proposed, how the system operates, what are the potential risks, and how they are managed. UPRC plans to conduct a series of such meetings, and will also be available to appear at group and organization meetings by invitation or to meet with individuals at their request. The sharing of information with the public would not end with implementation of the proposal. UPRC would continue to keep the community informed about the project and its operation through press releases, reports at meetings of local agencies, and meetings with interested groups.

In addition to the public involvement plan, the community will be involved through its emergency response providers and affected jurisdictions in preparation of an emergency response plan. Those people who may work or live within areas which could be affected by emergency response plan activation will be personally contacted about the plan, its purpose, and how and when it would be implemented.

III. FINDINGS OF THE CAVE CREEK SOUR GAS GATHERING SYSTEM 1984 ENVIRONMENTAL ASSESSMENT

MAJOR ISSUES

Several issues were raised during the 1984 Environmental analysis process. The most significant of these were health and safety and wildlife. Wildlife concerns centered on direct and cumulative effects of oil and gas development on crucial mule deer winter range. All pipeline routing alternatives must intersect crucial winter range on the Bear River Divide.

Health and Safety concerns focused on the consequences of accidental releases from a pipeline leak or rupture. Health and safety concerns were compounded by the fact that six of the seven existing wells proposed in 1983-84 to be serviced by the pipeline were near the city limits of Evanston. Additionally, all pipeline routes considered must cross the Bear River Valley where residential development was proceeding rapidly.

Five major pipeline routing alternatives were considered during the environmental analysis process. The various alternatives represented attempts to minimize the extent of habitat disturbance in crucial winter range and the risk of accidental exposure to lethal levels of H_2S. Health and safety concerns were given precedence over wildlife concerns and several alternatives were limited from detailed consideration on this basis.

IMPACT CONCLUSIONS AND 1992 UPDATES

The 1984 EA determined that significant environmental impacts would not be anticipated from implementation of the proposal. Following is a synopsis of the findings of that EA by issue. After each synopsis of the findings from the 1984 EA, a brief discussion is provided below which notes how UPRC's modifications to the 1984 or changes in the affected environment may influence the degree of effects should the UPRC proposal be implemented. These update discussions are in *italics.*

Air Quality

Air Quality would be not significantly affected by the project. Small amounts (64.2 tons/yr.) of nitrogen oxides would be emitted by the heaters. There is a potential for significant amounts of SO_2 to be emitted from emergency flares.

1992 Update - *UPRC's proposal includes nine line heaters, a heater at each wellhead, and a heater/treater at the proposed Wahsatch Delivery Facility. These heaters would have a process design maximum capacity of 3 MMBTU/HR each for a total maximum of 54*

MMBTU/HR installed capacity. This compares to the proposal considered in the 1984 EA of three line heaters and seven wellsite heaters with capacity of 5 MMBTU/HR and a heater at the Central Facility of 20 MMBTU/HR - a design total capacity of 70 MMBTU/HR. UPRC also proposes use of low NOx burners. Thus, while the number of heaters is increased, the total emissions of NOx from heaters would be reduced from the 1984 proposal. Annual NOx emissions from all 18 heaters is estimated to be 31.5 tons per year.

Use of the Wahsatch Flare Site for production testing of the Urroz #1 well in 1992 and the Urroz #B-1, Harry Moon, Bradbury, and Celsius #4-36 wells in 1993 would result in significant emissions of SO_2 during approximately one week of daylight flaring for each well. SO_2 emissions would also be produced at a temporary flare stack at the Fawcett and Sons well in 1993 and subsequently, at temporary flare stacks at the Kindler Reese and Champlin No. 375 C-1 wells when they are recompleted and tested. An estimated 56 tons or more of SO_2 would be emitted during production test flaring of the Urroz #1 well. However, air quality modelling conducted for purposes of application for an air quality permit from the Utah State Division of Air Quality demonstrates that the short term National Ambient Air Quality SO_2 standards would not be exceeded. Use of flare stacks for production testing would result in temporary emissions for one week for each well.

After production testing is completed, flares would be used only for emergency purposes. Should they need to be utilized to depressurize a substantial portion of the gathering system, significant SO_2 emissions would be experienced during the one hour depressurizing process. Such flare use and resultant emissions are anticipated to be infrequent and extraordinary.

Topography

The proposed project would not require major topographic alterations. Pipeline routing avoids steep, rock topography where construction and revegetation would be difficult.

1992 Update - *A portion of the pipeline route approved in 1984 crossed severe rock outcrops and rough terrain including two deep gullies in Bartlett Hollow west of the Bear River Valley. Ground inspections and surveying of the route indicate that construction at this location would be extremely difficult, require special techniques for trenching and laying of pipe in one nearly perpendicular location, and deep trenching in order to maintain the minimum six feet depth of the buried pipeline at the gully crossings. Successful reclamation and soils stabilization of the steep terrain at this point would be difficult and scaring of the rock outcrops would probably be visible from Highway 89 in the Bear River Valley.*

Therefore, the pipeline route will be moved 2,000 feet west at Bartlett Hollow. This shift in alignment begins about a mile and a quarter north of the junction of the Kindler Reese Spur in T7NR8E, Section 32. As approved in 1984, as the route proceeded northward from this point, it travelled to the northeast into Wyoming where the previously proposed Central Facility was to be located on high flat terrain. From there the route proceeded nearly due north about three miles before crossing back to the west into Utah a mile north of Bartlett Hollow. The Central Facility has been eliminated from the system. The deviation to the northeast onto high flat terrain in Wyoming is not necessary for this portion of the line. The line will now be routed directly north from Section 32 remaining in Utah rejoining the old route alignment in T7NR8E, Section 9. About three and one half miles of the route is affected by this realignment. This route refinement not only avoids construction and reclamation problems in Bartlett Hollow, but also reduces the length of this route segment and therefore slightly reduces overall project surface disturbance.

Two and one half miles of the route would remain on private lands. One mile of the realignment would move from privately-owned lands to Federal lands in BLM Section 28 in T7NR8E. The route refinement avoids an unnecessary degradation which would have been experienced in the previously approved alignment. Use of the refined alignment will be beneficial by reducing visual quality impacts, erosion potential, and severity of disturbance for all lands, private or federal.

For Section 28 and the private lands affected by this realignment, construction schedules would incorporate seasonal avoidance for sensitive habitat use areas, preconstruction cultural and threatened and endangered species surveys would be conducted, and all other mitigation measures and construction and operation stipulations would be applied. The Construction and Operations Plan and BLM Right-of-Way Grant transfer would incorporate such mitigation measures and stipulations necessary to avoid and/or protect sensitive resources in this pipeline segment as with all other portions of the pipeline.

Other minor deviations proposed to the 1984 pipeline alignment on private lands south of I-80 would not alter the findings of the 1984 EA.

Geology and Paleontology

The proposed action would cross geologic formations that contain mammalian and other fossils. No known paleontological sites would be affected. There is possibility that paleontological sites could be exposed and damaged during construction. The project would be located within a historical quiescent zone of the Intermountain Seismic Belt. Earthquake recurrence intervals are estimated to be in the order of hundreds to thousands of years.

1992 Update - *No changes are proposed which would alter the findings of the 1984 EA.*

Soils

Soils would not be significantly affected. The applicant is committed to soil handling techniques that should enhance revegetation efforts.

1992 Update - *No changes are proposed which would alter the findings of the 1984 EA. Stipulations would be attached to the BLM right-of-way grant to incorporate current BLM procedures and stipulations including procedures to segregate and avoid compaction and deterioration of topsoil.*

Water Resources

The proposed project would require crossing the Bear River upstream of Woodruff Narrows Reservoir. Water resources would not be significantly affected by construction or operation. If a pipeline leak or rupture occurred underneath the Bear River, surface water quality would be significantly affected by high levels of H_2S. The probability of an H_2S release at the Bear River crossing is small, estimated at a 1 chance in 132,000/year.

1992 Update - *No changes are proposed which would alter the findings of the 1984 EA. UPRC has committed to cooperation with State and Federal authorities in restoration of the fishery, including re-introduction of macroinvertebrates, should there be a gas leak which impacts the fishery. The current proposal also includes use of heavier walled pipe at the Bear River crossing.*

Vegetation

Approximately 544 acres of vegetation could be disturbed by construction. Most of the land is shrubland with good revegetation potential. About 20 acres of wet meadow/ riparian vegetation would be disturbed under the worst case disturbance assumptions. Construction stipulations would limit this area to that absolutely required for construction. River crossings would not require removal of any large trees although willow and hawthorne shrubs would be removed within the right-of-way.

1992 Update - *Under the current proposal, up to 531 acres of vegetation could be disturbed. Use of shrub clusters may be used in revegetation within the mule deer and elk crucial winter ranges based upon consultation with the BLM, Utah Division of Wildlife Resources and the Wyoming Department of Game and Fish. No changes are proposed which would significantly alter the 1984 EA's findings.*

Wildlife and Fisheries

Construction would require disturbance of up to 544 acres of wildlife habitat, including 46 acres of mule deer crucial winter range. Prompt revegetation with native species would limit the duration of the disturbance so significant effects are not anticipated. Construction timing stipulations would preclude wildlife disturbance during critical periods.

Significant fisheries impacts would occur, under worst case scenarios, if there were an accidental release of gas to the Bear River. Under high flow conditions, a leak or rupture could eliminate aquatic life from the Bear River downstream of the river crossing and from Woodruff Narrows Reservoir. The chance of this occurring is considered remote.

1992 Update - *Although there have been modifications in big game and other wildlife range areas since 1984, findings of the 1984 EA would be similar due to construction scheduling to avoid seasonally critical wildlife use periods, short-duration construction activity, and prompt revegetation with native species. Under the 1992 proposal, up to 531 acres, instead of 544 acres, of wildlife habitat would be potentially disturbed. Timing stipulations would be observed. Within the mule deer crucial winter range, the current proposal includes acre for acre offset habitat enhancement to mitigate for temporary loss of habitat within the pipeline construction corridor. Shrub clusters may be used during revegetation within the winter range areas. UPRC proposes to include reintroduction of macroinvertebrates to speed recovery should fishery restoration be necessary. Since 1984, larger numbers of elk, mule deer, and antelope winter in Rich County west of the Bear River Valley. A vehicle pull-off area has been built on Highway 16 three-quarters of a mile west of the pipeline route to afford elk viewing opportunities for the public. Also, further west, a BLM/Utah Division of Wildlife Resources Coordinated Wildlife Management Unit has been established. Elk hunting on private lands has become an important economic and recreational activity associated with the elk herd. Reviews of ranges of other game species within the project area has also been conducted through the BLM.*

The 1984 EA included maps which displayed the mule deer crucial/critical winter range, elk yearlong range, moose yearlong range, prairie dog colonies, sage grouse breeding complexes, sandhill crane use areas, and waterfowl use areas. Mapping included in Appendix N displays ranges for these species today within or adjacent to the project area. Changes from 1984 within the study area which are displayed on the maps include introduction of a mule deer range in Rich County and expansion of the mule deer crucial winter range in Uinta County; several additional sage grouse strutting areas and prairie dog towns; and changes in elk use areas. Bald eagles are winter residents of the crucial mule deer winter range displayed west of the Bear River Valley. Appendix N provides additional current information on wildlife and wildlife habitat for Rich and Summit Counties, Utah. UPRC

would cooperate with the BLM, Utah Division of Wildlife Resources, and the Wyoming Game and Fish Department, in determining and implementing mitigation measures and seasonal avoidance. The Construction and Operations Plan and Right-of-Way Grant stipulations will update areas of seasonable avoidance and other mitigation measures to comply with changes in wildlife use areas since 1984 and to minimize effects to wildlife.

Livestock and Grazing

Minor interference with livestock activities would occur during construction. No long term or significant impacts would occur.

1992 Update - *No changes are proposed which would significantly alter the findings of the 1984 EA. A minor deviation in the pipeline route is proposed south of the Harry Moon well to reduce disturbance of existing irrigated pasture land.*

Cultural Resources

Cultural resource inventories were completed for the originally proposed route, but Class III inventories were not done for the approximately five miles of modified right-of-way west of the Bear River Valley. The 1984 EA indicated that Class III inventories would be conducted for these lands prior to construction. For the areas which were inventoried, the only significant sites were determined to be the Mormon-California trail. However, the proposed action would have crossed the trail in areas where the trail is no longer visible. Therefore, it was determined that there would be no significant impact.

1992 Update - *The proponent will conduct Class III inventories for those areas within the pipeline route modified in 1984 and otherwise cooperate with the BLM to determine, conduct, and respond to such other cultural resource surveys and protection measures deemed necessary to protect these resources prior to project construction.*

Visual Resources

The proposed project would occur primarily in BLM Visual Resource Class III and IV areas. Portions of the Bear River Valley and the Wyoming Highway 89 corridor is designated as a Visual Resource Class II area. It was determined that for the Class III and IV areas, the development would be consistent with the Resource Management criteria and that for the Class II area, availability of irrigation water and agricultural use of the lands would soon negate adverse visual effects.

1992 Update - *The current proposal increases the number of line heaters to nine and, therefore, the number of above ground, visible intrusions to the landscape. However, these facilities would be low profile, and except for necessary use of warning, safety colors, painted*

to blend with their surroundings. Heater facilities include two 50 barrel tanks, ESD valves, antennae, the heater, and other appurtenances. The most noticeable heater facility would be located adjacent to U.S. Highway 16 just within Utah. This facility is proposed to be placed behind an existing berm to minimize its intrusion, but it would be visible to passing motorists. Elimination of the Central Facility from the proposal reduces visual impacts along the pipeline corridor. Addition of the Wahsatch Delivery Facility would mean a new group of facilities including a flare stack adjacent to the existing Whitney Canyon Inlet and Whitney Canyon Processing Plant. Recommissioning of the Wahsatch Flare Site and its use for production testing would require a flare stack of 90 feet in height in order to comply with air quality standards. The top of the flare stack may be visible to motorists on I-80 from two vantage points. The refined alignment along the state line would eliminate potential long-term scarring of pipeline construction over steep terrain and rock outcrops in Bartlett Hollow.

Noise

Noise would be generated by construction activities and by heaters at the wellheads, central facility, and three locations on the pipeline. Significant impacts would not be anticipated due to the distance between the pipelines and noise sensitive receptors. Noise from wellhead heaters would be about 55 decibels at the nearest residence to a wellsite (1,000 from the Bradbury well). It was determined that the proposed project was not expected to generate significant noise impacts.

1992 Update - *The current proposal increases the number of line heaters, however, the distance between their locations and noise sensitive receptors is sufficiently large that the findings of the 1984 EA would still be applicable.*

Recreation

Significant impacts to recreational activities are not anticipated due to construction or normal operation. If the worst case scenarios of H_2S releases at the Bear River crossing occurred, significant recreation impacts would occur due to the loss of the fishery in the Woodruff Narrows Reservoir. The applicant committed to restoring the fishery if this occurred. The chances of an accidental release at the crossing are remote.

1992 Update - *No changes are proposed which would alter the findings of the 1984 EA.*

Land Use

The proposed project would not significantly affect existing land uses. The applicant revised its proposed action after Draft Environmental Assessment (DEA) publication to avoid land use and health and safety conflicts. Future land uses could be restricted near the

pipeline due to the chance of H_2S exposure. The Alternative 1 pipeline alignment would have conflicted with existing and proposed residential development in the Bear River Valley and was not selected. Development in the valley was rapid since publication of the DEA.

1992 Update - *The circumstances described in the 1984 EA are very similar today. The pipeline route modifications adopted in 1984 are retained in the current proposal. Future land use restrictions near the pipeline identified in the 1984 EA due to the chance of H_2S exposure are valid under the 1992 proposal. These land use restrictions have also effectively applied to the existing shut-in wells proposed for production. However, once these wells have been produced, the gas reservoir depleted, and the wells plugged and abandoned, these existing area land use restrictions would no longer be applicable.*

Transportation

No significant transportation impacts would be anticipated.

1992 Update - *The findings of the 1984 EA are unchanged.*

Socioeconomics

No significant socioeconomic impacts would be anticipated. Construction would occur in a short (six month) period. The operations work force is expected to be only eight persons. The project would increase the tax base in Uinta, Rich, and Summit Counties.

1992 Update - *The findings of the 1984 EA are not significantly affected, except that UPRC intends to employ nine persons in its operations work force and local communities have experienced expansion in their infrastructure and services capacities and availability of construction worker housing and/or mobile home sites.*

Health and Safety

The potential effects of an accidental gas release were a major concern throughout the environmental analysis. The applicant included many features in the project design to prevent pipeline failure, to limit the extent of any possible failures, to monitor for pipeline leaks, and to respond to an emergency situation. The applicant and BLM altered proposed pipeline alignments several times to avoid areas with existing or proposed commercial and residential developments. The proposed action alignment analyzed in the Final EA would not expose any existing or proposed residence to dangerous H_2S levels under the worst case conditions. There remains a possibility that persons, wildlife, or livestock would be killed if they were near the proposed facilities at the time of a pipeline leak or rupture.

1992 Update - *All pertinent aspects of the proposal subject to the 1984 EA were reviewed by UPRC, the BLM, and outside experts to assure that current state-of-the-art materials, systems, and procedures are utilized in project design, construction, and operation in the proposal as now advanced. The Design Safety Aspects section of this document describes these components. The modified pipeline route segment approved in 1984 has been retained to maintain the distance between the pipeline and occupied structures. Minor deviations in the 1984 approved route within the Yellow Creek Deep Field maintain or increase distances from the pipeline to occupied structures. The refined alignment along the state line moves that portion of the line up to 2,000 feet further west from residential areas in the Bear River Valley. One well is added to the system, the Celsius 4-36. The Celsius well is about 2,500 feet south of I-80, further from occupied structures than either the Bradbury or Harry Moon wells which were considered in the 1984 EA.*

As now proposed, the pipeline is ten inches in diameter from the Urroz junction to the Whitney Canyon Delivery Facility. This will facilitate pigging of the pipeline to remove liquids and facilitate use of a "smart pig" for this entire segment to detect developing physical defects or corrosion problems in the pipe. The six inch portions of pipeline would also be "smart pigged."

Wellhead and pipeline materials are all resistant to H_2S. The existing wellheads will be replaced with wellheads designed specifically for this system and use in H_2S operations. Inspection and monitoring will be conducted during materials fabrication and installation to assure compliance with design specifications.

UPRC's proposal includes a computerized Supervisory Control and Data Acquisition system to continually monitor operating parameters and output from ambient air monitors located at all above ground facilities. The system would be programmed to close ESD valves should abnormal conditions be detected or ambient H_2S concentrations reach 40 ppm. Redundant safety mechanisms are included throughout the system. Valves would automatically close with loss of pressure, remote telemetry units would monitor and can independently respond to local conditions, and battery back-up is provided for all electrically powered systems (whether solar or AC powered). The maximum time from an initial monitoring or leak system alert signal to initiation of situation response is one minute. ESD valve closure would be complete within 10 to 20 seconds of activation.

The 1992 proposal includes a total of 68 ESD valves: four at each wellsite; two at each line heater location; and 18 other ESD valve locations along the pipeline. Emergency flare stacks will be maintained at the Wahsatch Delivery Facility and at the Wahsatch Flare

Site which would have the capability of depressurizing the entire pipeline within one hour. In addition, emergency flare stacks would be maintained at each wellsite.

New air dispersion modelling and risk analysis has been conducted displaying the potential effects of a worst case pipeline rupture or well blow out accident under worst case weather conditions. The 1984 EA focused on a threshold of 250 ppm concentrations for ten seconds for purposes of determining public safety and determined there were no homes or businesses which could experience that threshold concentration from a worst case accident. The 1984 EA found that the overall risk is "negligible." The current proposal's dispersion modelling and risk analysis does not state that there is no risk to people living or working at homes and businesses closest to wells or the pipeline. Instead, the analysis quantifies the risk and finds that it is extremely small, significantly smaller than risks experienced in ordinary life. Dispersion analysis utilized the DEGADIS model, a model developed at the University of Arkansas under a joint U.S. Environmental Protection Agency/Gas Research Institute grant.

Public Protection Plan requirements under the BLM's Onshore Order Number 6 are being met in preparation of an emergency response plan which will include all areas regularly frequented by people which could experience H_2S concentrations of 100 ppm or more under worst case accident and weather conditions. The Isopleth Map in Appendix I displays the worst case 100 ppm concentration parameter. The 100 ppm concentration parameter being applied in 1992 provides a margin of public safety in planning for response to the remote possibility of an accidental major gas release. The emergency response plan is being prepared in cooperation with local authorities.

Overall, findings of the 1984 EA would not be substantially altered by the 1992 proposal. However, use of new materials components, corrosion control and monitoring procedures and mechanisms, and redundancy in leak detection/system shut-down and response mechanisms will better assure the integrity of the system over its operational life. Furthermore, new dispersion modelling/risk analysis techniques and a longer historical data base of recorded incidents provide greater accuracy in anticipating the areas, concentrations, and risks of potential exposure in a worst case accidental sour gas release.

1984 ALTERNATIVES CONSIDERED

A total of eight alternatives were considered during project planing and scoping of the 1984 EA description. Three of these evaluated alternative routing of the pipeline, two influenced the siting of the Central Facility, one alternative would have affected the size of the main

pipeline, one considered the construction of a new sour gas processing plant in the vicinity of Cave Creek Field, and finally the no action alternative.

These eight alternatives were eliminated from detailed consideration because they were (1) unreasonable in terms of accomplishing the objectives of the proposed action, or (2) because they did not provide an alternative which clearly posed fewer adverse environmental impacts.

Cave Creek Processing Plant

Amoco found that the reserve basis for Yellow Creek Deep and Cave Creek Fields would not justify the construction of a new stand alone plant (UPRC concurs with this finding). The EA suggested that a new processing plant would pose a greater environmental impact than the proposed pipeline based on an analysis of the Whitney Canyon and Carter Creek Processing Plants. The Proposed Action would not require any additional modifications in the Whitney Canyon Plant process.

Increased Pipeline Capacity

The question of increased pipeline capacity to accommodate additional future sour gas discoveries was raised during scoping meetings. Twelve, sixteen, and twenty four inch diameter pipelines were considered. Due to the uncertainty of predicting future discoveries and the associated estimated reserves for the proposed action, a larger pipe diameter is not justified. In addition, a larger diameter pipe would present pipeline operation difficulties. In a larger pipe there would be increased liquid accumulation in low areas reducing pipeline operating efficiency and the effectiveness of the corrosion treating program.

Central Facility

Amoco proposed the Central Facility that was considered in the 1984 EA to serve as a compressor station and as a site for emergency flaring. Alternative sites were considered, however, based upon conflict with the Evanston airport and sewage plant the site was moved further north.

In 1991, Amoco initiated the startup of field compression at the inlet to the Whitney Canyon Plant, which duplicates the service intended for the Central Facility. Consequently, UPRC will not construct this facility.

Pipeline Route Alternatives

Five alternative routes were considered in the analysis in an effort to minimize the potential safety risks for residents in the Bear River Valley. A determination was made that disturbance to the mule deer crucial winter range could not be avoided. The potential hazards of an accidental release of sour gas were given priority in evaluating alternatives for consideration. The Proposed Action minimized the potential conflicts with existing residences and businesses. UPRC's Proposed Action plan is consistent with the 1984 EA Proposed Action alignment.

No Action Alternative

The impacts of construction, operation, emergency operation, and abandonment would not occur if this action were selected. As there are currently no other alternatives for processing the sour gas, production from the eight existing wells would be delayed. The opportunity for processing the gas would be lost, unless other plans or alternatives were developed and approved in the future. Since the approval of the Final EA in 1984, no other alternative has been identified for the Proposed Action.

BLM REVIEW

Amoco Production Company originally applied to the U.S. Department of the Interior Bureau of Land Management (BLM) for a right-of-way (ROW) grant to cross federal lands. Resulting decisions and the ROW grant to Amoco were based upon a final environmental assessment and decision record (DR) issued in 1984. That ROW grant remains in effect. Union Pacific Resources acquisition of the project from Amoco in 1991 necessitates the transfer of the Amoco ROW grant to UPRC before implementation can begin by UPRC. BLM's responsibility in this regard is to carefully reexamine the environmental assessment and decision record prepared for the Amoco Cave Creek project before proceeding with reassignment. The purpose of reexamination is to determine whether there exist significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

The Rock Springs and Salt Lake Districts of the BLM have conducted a review of UPRC's project proposal and carefully reexamined the EA and DR originally prepared for the Amoco Cave Creek proposal in relation to UPRC's proposal. Based on the reexamination as summarized in the comparative findings analysis above, BLM finds that there are no new circumstances or relevant environmental concerns with UPRC's proposal not already addressed in the Cave Creek EA. Although the pipeline route refinement along the

Utah/Wyoming state line and big game habitat areas in Rich County are changes since the 1984 EA, the analysis in 1984 considered a one-half mile wide analysis corridor on each side of the proposed route. It looked at area-wide potential impacts of the project and in so doing, allowed for modifications and adjustments in the route to address potential resource conflicts. In fact, additional route refinements may occur in response to pre-construction Class III cultural surveys and surveys for threatened and endangered plant and animal species. Construction activity scheduling to avoid seasonally sensitive wildlife habitat areas, revegetation requirements, and other mitigation measures are designed and will be implemented to minimize disturbance to important wildlife wherever their important habitat and use areas may occur.

BLM also finds that, based on the synoptic review and comparisons of UPRC's proposal presented above, the proposal, with its changes, is environmentally acceptable because it, 1) includes a similar pipeline route on public lands as the originally approved proposal; 2) includes route refinements which are within the corridor subject to analysis in 1984 and which would environmentally be a beneficial modification to the proposal by avoiding unnecessary or undue degradation to lands; 3) incorporates current regulatory and industry construction and operation requirements; 4) includes design improvement modifications that enhance or upgrade the design, materials, and operations components to combine today's scientific and technological knowledge to assure system integrity and public and worker safety; 5) utilizes the latest methodology to assess and fully understand the safety aspects of the project resulting in a system design that includes proven control technology and materials and practices for an H_2S environment; and 6) provides for resource considerations, construction procedures and stipulations, reclamation procedures and other consideration contained in the 1984 EA with minor modifications to make them current.

BLM finds that the UPRC proposal fully conforms with the original Cave Creek EA and DR, the Rock Springs District Resource Management Plan completed in April 1986, and the Salt Lake District Randolph Management Framework Plan completed in June 1980. BLM therefore concludes that further environmental analysis is unnecessary and that transfer of the Amoco ROW grant to UPRC is appropriate and acceptable. Implementation by UPRC would be contingent upon compliance with the terms and conditions of the ROW grants. The ROW grant terms and conditions as provided in 1984 are listed in Appendix M. Modifications may be made in the grant and stipulations prior to transfer of the grant to UPRC to reflect current regulations and polices.

VI. POTENTIAL PROJECT BENEFITS AS NOW PROPOSED

Two primary socioeconomic beneficial effects are anticipated from project implementation: short and long term employment and economic activity associated with project construction and operation; and, increased revenues and tax base for the affected counties and governments. Additionally, production from these wells contributes to our domestic energy supply helping to reduce dependence on imported foreign energy.

A total of $40,643,000 in local, state and federal royalties, severance, ad valorem, and sales and use taxes are estimated to be paid over the life of the project. Revenue projections in the following discussion are presented as total dollar amounts for the life of the project. They are based upon estimates of potential resource production, costs of materials and construction, employment levels, and product price. The 1991 tax rates are applied. Changes in any of these factors would affect actual revenues attributable to the project.

Revenue projections for royalties, severance tax, and production ad valorem taxes are particularly sensitive to market prices. Conservative price estimates, reflecting today's depressed oil and gas prices, were used for these computations. Revenue projections for 1994 production were based on an estimated gas price of $1.34/Mcf. Revenue projections are undiscounted meaning a dollar of revenue today may have less value in the future.

EMPLOYMENT

It is estimated that an average of 125 people would be employed over a six month period during construction. To the extent the necessary labor force is available, efforts would be made to hire people from the local project area. Based upon an average employment of 125 people working eight hours a day for a six day work week at an average hourly wage of $20 per hour, approximately $3.1 million would be paid in construction workforce wages.

When normal operation is achieved, it is anticipated that nine people would be employed full time for operation and maintenance of the gathering system and wells, for an estimated annual total wage and benefits of $470,000, $9.4 million payroll for the projected 20 year project life. Additionally, over the life of the project, contractor and service companies would be hired periodically for normal facilities maintenance and service.

Normally new employment stimulates local economic activity and also results in new service sector and other jobs related to the direct project employment. It is anticipated that similar indirect economic and employment benefits would occur in Uinta County from this project, however, attempts have not been made to estimate the results of this multiplier effect in the

local economy. The following revenue estimates do not include payroll taxes or federal income tax, or State of Utah income tax on wages.

WYOMING

State and local tax revenues generated in Wyoming would go to the state, Uinta County, and political subdivisions within the County depending upon the tax levied and the distribution formulas for that tax.

Sales Taxes from Expenditures of Wages - The preponderance of new wages spent in the local economy and subject to sales taxes would probably be spent in Evanston and Uinta County. Based on the current four percent sales tax and assuming that 25 percent of gross construction workforce wages were spent locally for goods and services subject to sales tax and that 33 percent of gross permanent wages were spent for goods and services subject to sales tax, a total of $155,300 would be collected locally over the life of the project.

Sales and Use Taxes From Construction Material Purchases - Based upon a four percent sales and use tax rate, assuming estimated costs of construction materials purchased and that 15 percent of non-labor installation costs would be subject to sales/use taxes, it is estimated that $371,000 in sales and use taxes would be paid in Wyoming.

Non-Production Ad Valorem Taxes - Assuming a 20 year straight-line depreciation of system components within Uinta County, applying Wyoming's current assessed valuation formula of 11.5 of depreciated value for pipeline property, and applying the current tax rate for unincorporated areas of western Uinta County of 72.549 mills, an estimated $1,250,100 would be paid in property taxes over the life of the project.

Production Ad Valorem Taxes - Based on projected production, estimated product price, and current tax rates, an estimated $12,363,000 would be paid in ad valorem taxes on production from the five Wyoming wells proposed for initial production.

Severance Taxes - Based on estimates of production and product price, $10,661,000 would be paid in Wyoming severance taxes over the life of the project.

Royalties - Wyoming would collect royalties on partial production from the Yellow Creek Deep field, an estimated $574,000. Additionally, under provisions of the Mineral Leasing Act of 1920 as amended, Wyoming would receive 50 percent of the Federal mineral royalties collected (currently less costs of administration) for production from

three communitized wells in Yellow Creek Deep where federal royalties would apply. The state's 50 percent share is estimated at $2,564,000.

Distribution of Wyoming Revenues

Wyoming/Uinta County Sales and use taxes are distributed by formula. 2.02 percent of Uinta County's four percent sales tax goes to the State of Wyoming. Of that 2.02 percent, 0.10 percent is now distributed by the State to Cities and Towns. However, that 0.10 percent distribution will expire at the end of FY 1992 and has not been identified in the following revenue distribution table. 1.98 percent of sales tax revenue is utilized within the County, divided among municipalities and the County based upon population. These projections have not attempted to allocate distribution of revenues within the County. The following table displays which portions of the above revenues would go to the state and which would go to Uinta County for each of the revenue streams.

Table 2, Distribution of Revenues State of Wyoming and Uinta County
(rounded to nearest $1,000)

	Tax	Amount
State of Wyoming	Sales & Use Taxes	$ 266,000
	Severance Taxes	10,661,000
	Royalties	3,138,000
Uinta County & local Municipalities	Sales & Use Taxes	261,000
	Non-Production Ad Valorem	1,250,000
	Production Ad Valorem	12,363,000
	Wyoming Total	**$27,939,000**

UTAH

State and local tax revenues generated in Utah would go to the State of Utah, Rich County, Summit County, and political subdivisions within the counties depending upon the tax levied and the distribution formulas for that tax.

Taxes from Wages - It is assumed that the preponderance of new wages would be paid and spent in Uinta County, Wyoming. However, it is possible that some workers may choose to live in Summit or Rich Counties, Utah. If so, a portion of the sales taxes attributed to Wyoming would be collected and retained in Utah. Additionally, the State of Utah would collect Utah State income tax on any such wages paid.

Sales and Use Taxes From Construction Material Purchases - Based upon a six percent sales and use tax rate, assuming estimated costs of construction materials purchased and that 15 percent of non-labor installation costs would be subject to sales/use taxes, it is estimated that $239,000 in sales and use taxes would be paid in Rich County. $204,000 would be paid in Summit County. This allocation is based upon proportional length of the system built in each county. Actual expenditures and taxes owed within each county may vary.

Non-Production Ad Valorem Taxes - Estimates were made assuming a 20 year straight-line depreciation of system components. The allocation of tax by county was based upon the estimated length of the system built in each county. Actual values and tax may vary depending upon actual costs within specific taxing districts. A pro-rated current tax rate of 0.009535 was applied for Summit County with weights of actual property tax rates proportioned by the percentage of the system within each subdivision. Estimated taxes over the project life for Summit County are $540,300. For Rich County, the current tax rate of 0.010212 was applied for a total tax of $664,800.

Production Ad Valorem Taxes - For the Fawcett & Sons well in Utah, based on projected production, estimated product price, and current tax rates, an estimated $3,187,000 ad valorem taxes on production would be paid to Summit County.

Severance Taxes - Based on estimates of production and product price, $5,305,000 would be paid in Utah severance taxes over the life of the project. The Utah severance tax rate varies dependent upon price. This figure is therefore sensitive to price and effective tax rate.

Royalties - No state or federal royalties would be collected on Utah production.

Distribution of Utah Revenues

Utah and County/local sales and use taxes are distributed by formula. 4.99 percent of the sales tax goes to the State of Utah with 0.03 percent to the Utah Sports Authority. 0.98 percent of the sales tax goes to the County. Distribution of sales tax within the Counties

is by formula and is not displayed. Table 3 displays which portions of the above revenues would go to the state and which would go to Rich County and to Summit County.

Table 3, Distribution of Revenues
State of Utah, Rich County and Summit County
(rounded to nearest $1,000)

Tax		Amount
State of Utah	Sales & Use Taxes	$ 369,000
	(Sports Authority)	2,000
	Severance Taxes	5,305,000
Rich County	Sales & Use Taxes	39,000
	Non-Production Ad Valorem	665,000
Summit County	Sales & Use Taxes	33,000
	Non-Production Ad Valorem	540,000
	Production Ad Valorem	3,187,000
	Utah Total	**$10,140,000**

FEDERAL GOVERNMENT

The federal government would collect royalties on three communitized wells within the Yellow Creek Deep field at 12 1/2 percent. One half of the royalties collected would be retained by the federal government, $2,564,000.

TOTAL TAX REVENUES

With the assumptions, estimates, and tax rates described above, total project revenues are displayed on Table 4, Summary of Wahsatch Gathering System Tax Revenue Benefits Over the Project Life.

Table 4, Summary of Wahsatch Gathering System Tax Revenue Benefits Over the Project Life[1]

ENTITY	ROYALTIES	SEVERANCE TAXES	AD VALOREM TAXES[2]	SALES & USE TAXES	TOTAL TAX REVENUES
Federal Government	$2,564,000[3]				$2,564,000
State of Wyoming	$3,138,000[4]	$10,661,000		$266,000	$14,065,000
Uinta County	-	-	$13,613,000[5]	$261,000	$13,874,000
Wyoming Subtotal	$3,138,000	$10,661,000	$13,613,000	$527,000	$27,939,000
State of Utah	-	$5,305,000	-	$371,000[6]	$5,676,000
Rich County	-	-	$665,000	$39,000	$704,000
Summit County	-	-	$3,727,000	$33,000	$3,760,000
Utah Subtotal	-	$5,305,000	$4,392,000	$443,000	$10,140,000
Totals for Project	$5,702,000	$15,966,000	$18,005,000	$970,000	$40,643,000

1 Estimates are in 1992 dollars and not discounted to reflect the value of revenue in future dollars.

2 Includes production and non-production ad valorem taxes.

3 Projected federal mineral royalties total $5,128,000, however, one half of federal royalties collected are returned to state in which they are generated (Wyoming).

4 A portion of Wyoming's share of federal royalty payments would go to the federal government to cover the administrative costs of the program. These costs are currently averaging about 6.5 percent of royalties.

5 Approximately 17 percent of ad valorem taxes in Uinta County would go to the State School Foundation Funds. The remainder would be divided among County government, schools, and special assessment districts.

6 Includes $2,200 to Utah Sports Authority.

VII. PERMITTING REQUIREMENTS

For construction and operation of the Wahsatch Gathering System to proceed, a number of approvals and permits are required from several local, state and federal agencies. The project is within the jurisdiction of two states, three counties, and the City of Evanston and includes federal, state, and privately owned lands. Following is a list of approvals or permits believed necessary for project construction and operation and the responsible agencies or jurisdictions.

Permit/Approval	Agency	Status or Requirements
Environmental Assessment	Bureau of Land Management	Amend/revise 1984 EA to reflect results of public scoping, changes in proposal, dispersion modeling, contingency plans, etc.; review of 1984 BLM grant of ROW
Endangered Species Review (Section 7)	U.S. Fish & Wildlife Service	Section 7 reviews to be completed prior to construction
404 Wetlands Permit	Corps of Engineers/EPA Utah & Wyoming Offices Wyoming DEQ/Water Quality Division UT DEQ/Division of Water Quality	Notification under nationwide permit to Corps of Engineers Oversite Review for WY DEQ Oversite Review for UT DEQ
Historical Preservation/ Archaeological	Advisory Council for Historic Preservation Bureau of Land Management UT Division of State History UT State Lands & Forestry WY State Historic Preservation Office	Section 106 Review Permit to conduct archeological survey/excavation on fed. lands Permit to conduct archaeological investigations Cultural Resources Review Cultural Resources Review
NPDES Permit	WY DEQ/Division of Water Quality	Discharge Hydrotest Water if used
Re-entry Well Permit	WY Oil & Gas Commission	Application for Permit to Drill (APD) for wells shut-in 90 days
Re-entry Well Permit	UT Div Oil, Gas & Mining	File Change of Operator; APD for re-entry
Change of Operator	UT Div Oil, Gas & Mining	File Change of Operator with Division

Permit/Approval	Agency	Status or Requirements
Wahsatch Flare System	WY Oil & Gas Commission	System was previously permitted
Oil & Gas Well Permit	Evanston, City Council/Planning & Zoning Commission	Oil & Gas Well Permit
Air Quality	WY DEQ/Air Quality Division UT DEQ/Division of Air Quality	For heaters & flare stacks For heaters & flare stacks
State Clearinghouse procedures	UT State Planning Office WY State Planning Office	Coordination of State Reviews
Temporary Water Use	WY State Engineer	Water for hydrotest, if used
Microwave License	Federal Communications Commission	For microwave communication system, if used
Rights-of-Way and Use Permits	BLM	Previously issued in 1984
	UPRailroad	Permit to cross railroad
	UT Dept. of Transportation	ROW encroachment permit
	WY Dept of Highways	License for utility crossing
	WY State Lands Dept. UT State Lands	ROW & Permits
	Uinta Co. Commission	Road crossing permit
	Uinta C. Planning & Zoning	Use Certificate
	Evanston, City Council	Street Crossing permit
	Evanston, City Council/Planning & Zoning Commission	Conditional Use permit
	Summit Co. Commission	Road Crossing permit
	Summit C Planning & Zoning	Conditional Use permit
	Rich Co., Co. Commission	Conditional Use permit
	Bear River Regional Com.	Road Crossing permit

VIII. GLOSSARY

Air Dispersion Modeling - Air dispersion modeling is the use of mathematical equations (models) to predict the rate at which vapors or gases released into the air will be diluted (dispersed) by the air. The purpose of air dispersion modeling for this project is to predict the extent of potentially toxic or flammable gas concentrations, in air, by calculating the change in concentration of the vapor or gas in the air as a function of distance from the source of the vapor or gas.

Buttweld - A weld in a joint between two pipes aligned approximately in the same place.

Cathodic Protection - A mechanical means of suppressing the flow of electrons from a metallic material to an adjacent conducting object. In the absence of cathodic protection, metal loss will occur from the pipe to the surrounding area.

Emergency Shut Down Valve (ESD) - Valves in the wellhead tree, at the wellsite and in the pipeline system which when closed block the flow of gas in either direction. ESD Valves will close automatically in response to an abnormal change in pressure, activation signals from H_2S ambient air monitors, or activation from computerized control systems. ESD valves may also be opened or closed manually. ESD valves are also known as block valves.

H_2S - (hydrogen sulfide) - a flammable, colorless, toxic gas that is sometimes encountered as a naturally occurring contaminant in crude oil and natural gas. H_2S has a strong odor, often compared to the smell of rotten eggs. H_2S is an acid gas that, when dissolved in water, can cause corrosion.

Hazard Footprint - The area over which the hazard level of a specific type of hazard is predicted to equal or exceed some level of concern.

Hydrate - Snow like chemical compounds formed by light hydrocarbons combining with water. Under pressure, formation of hydrates occurs above the temperature of 32 degrees Fahrenheit. This represents a serious production problem due to the formation of a solid plug.

Methanol - Sometimes referred to as methyl alcohol or wood alcohol. Methanol is a clear, odorless, flammable liquid that can be produced from methane. Methanol is water soluble and, when mixed with water, depresses the water's freezing point. Methanol is often injected into hydrocarbons to prevent the freezing of free water in the hydrocarbon during certain processes, and to dissolve ice crystals that may have already formed.

Multiphase Pipeline - A system containing both liquids and gases.

NOx - (nitrogen oxides) - NOx is a toxic gas produced during high temperature oxidation (i.e. burning or combustion) of flammable materials in air. NOx is a common air pollutant because it is created during the combustion process in internal combustion engines.

Pigging - A pipeline operation which mechanically removes liquid and debris which has accumulated within the pipe A ball or cylinder (pig) is pushed through the pipe via gas pressure to remove liquids.

Pig Launcher - A series of interconnected pipes and valves which enable launching of the pig at the higher pressure end of the pipeline which is to be pigged.

Pig Receiver - A series of interconnecting pipes and valves which catch the pig at the lower pressure end of the pipeline. The pig is removed and utilized again and returned to the pig launcher for further pigging operations.

Radius of Exposure - As used in Onshore Order #6, the calculation resulting from use of equations and dispersion modelling methods to determine the area in which concentrations of H_2S resulting from a release of sour gas may reach 100 ppm or 500 ppm.

SO_2 - (sulfur dioxide) - A colorless, nonflammable, toxic gas with the odor of rotten eggs. SO_2 is produced when sulfur or sulfur-bearing compounds are burned (for example, flaring of H_2S or sour natural gas will create SO_2).

Smart Pig - An electronic device which is run inside of pipe that detects and records information related to the pipeline's physical characteristics. (wall thickness, pitting, cracks and physical defects).

Socket-weld - Process of welding a piece of pipe after the pipe end is inserted into a socket where the inside diameter is slightly larger than the pipe's outside diameter.

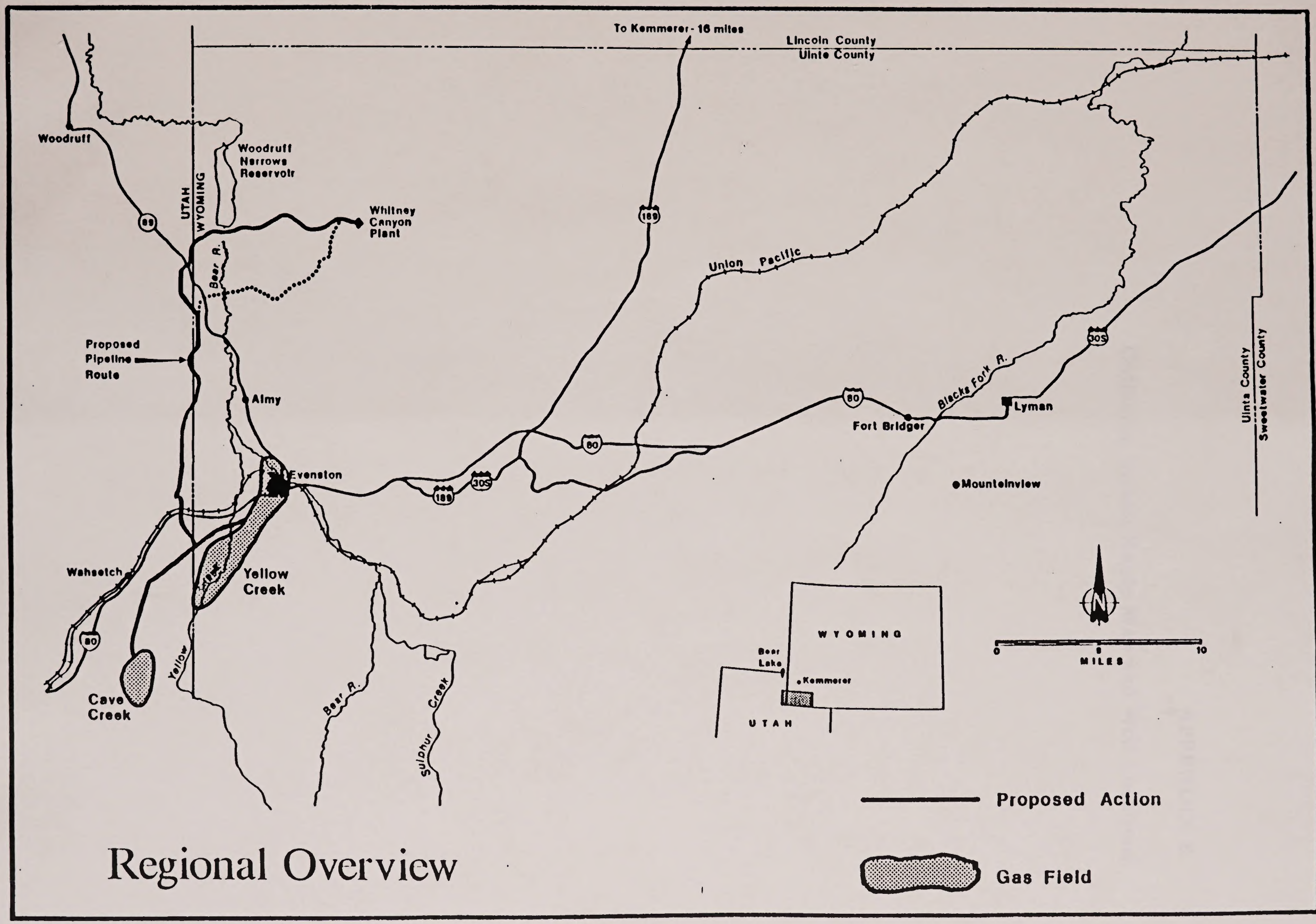
Sour Gas - Natural gas containing significant quantities of Hydrogen Sulfide (H_2S). Sometimes referred to as acid gas. Sour gas represents a health hazard and in low concentrations smells like rotten eggs.

Slug Catcher - A series of pipes or vessels sized to accommodate or catch the liquid buildup generated within the pipeline and /or generated from pigging operations. It also provides the initial stages of liquid and gas separation.

IX. APPENDICES

APPENDIX A.

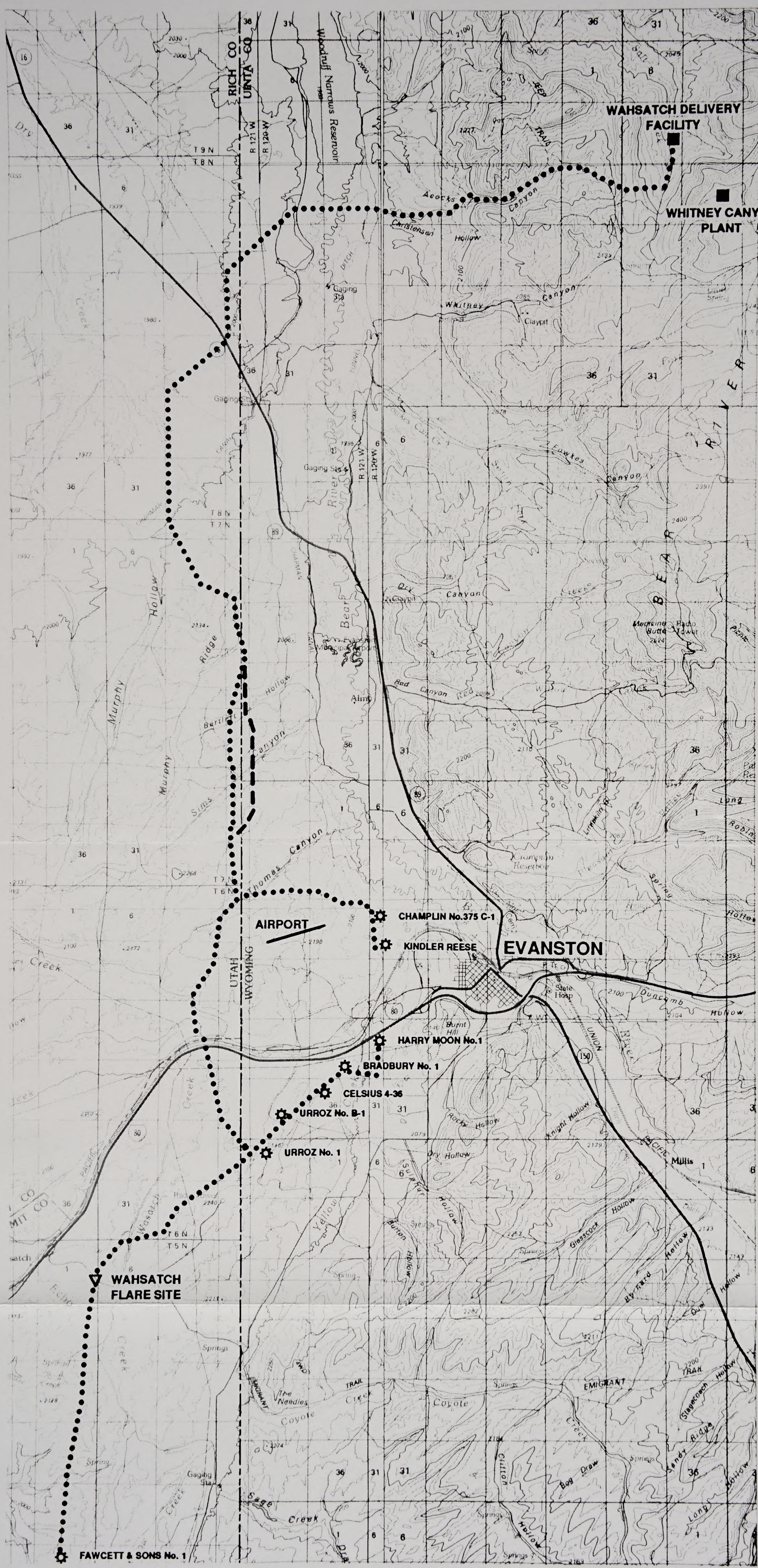
Regional Overview



Regional Overview

APPENDIX B.

Gathering System Route Map and Well Locations



WAHSATCH SOUR GAS GATHERING SYSTEM

●●●●● 1992 SOUR GAS PIPELINE

▬ ▬ 1984 ALIGNMENT

✡ WELL SITE

Union Pacific Resources

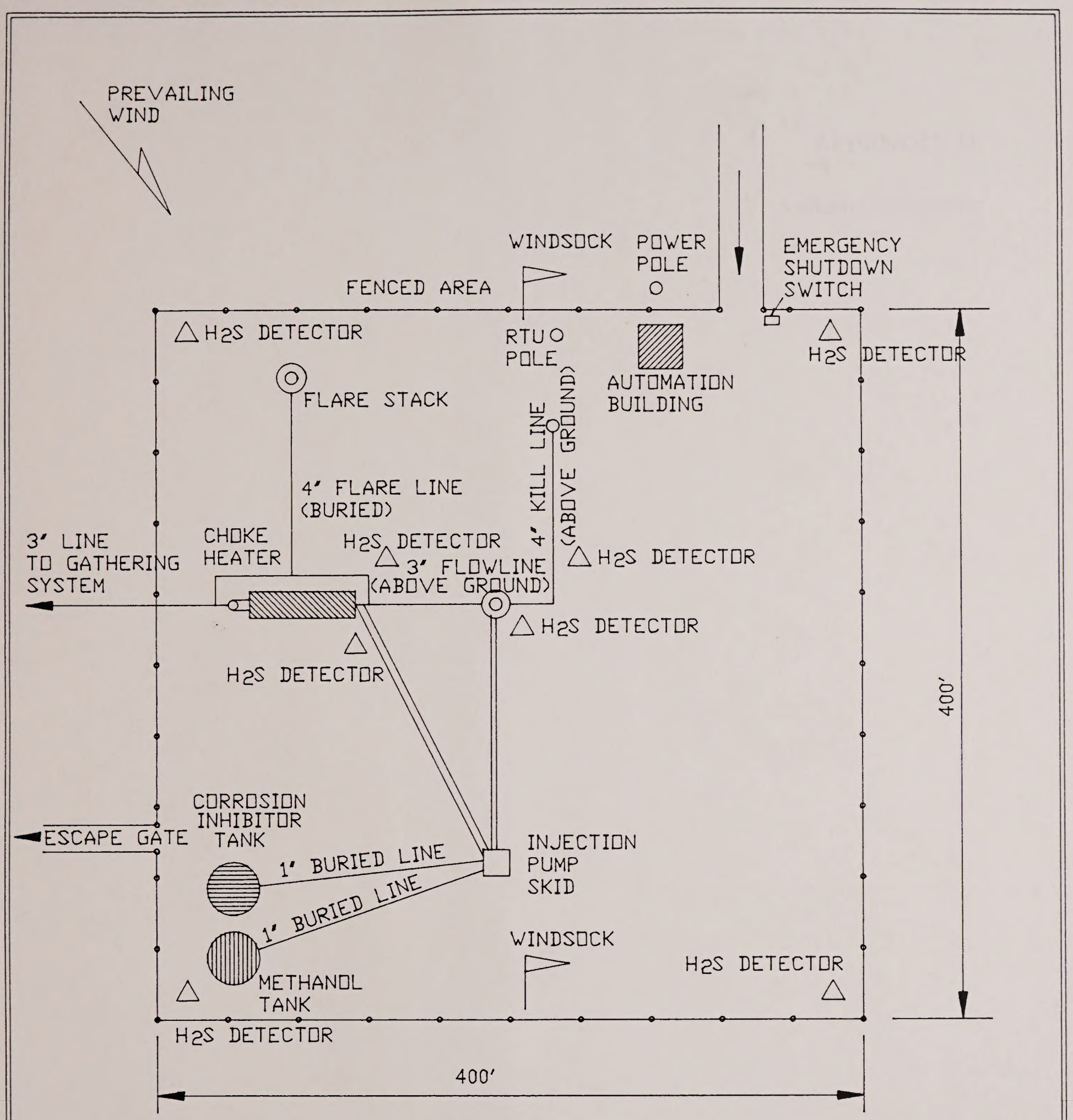
SUMMIT & RICH CO., UTAH
UINTA CO., WYOMING

FACILITIES & SOUR GAS PIPELINE

KILOMETER 0 1 2 3
MILE 0 1 2

APPENDIX C.

Wellsite Configuration



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PROJECT

TYPICAL WELL SITE CONFIGURATION

DATE	DWG. NO.	PAGE	OF
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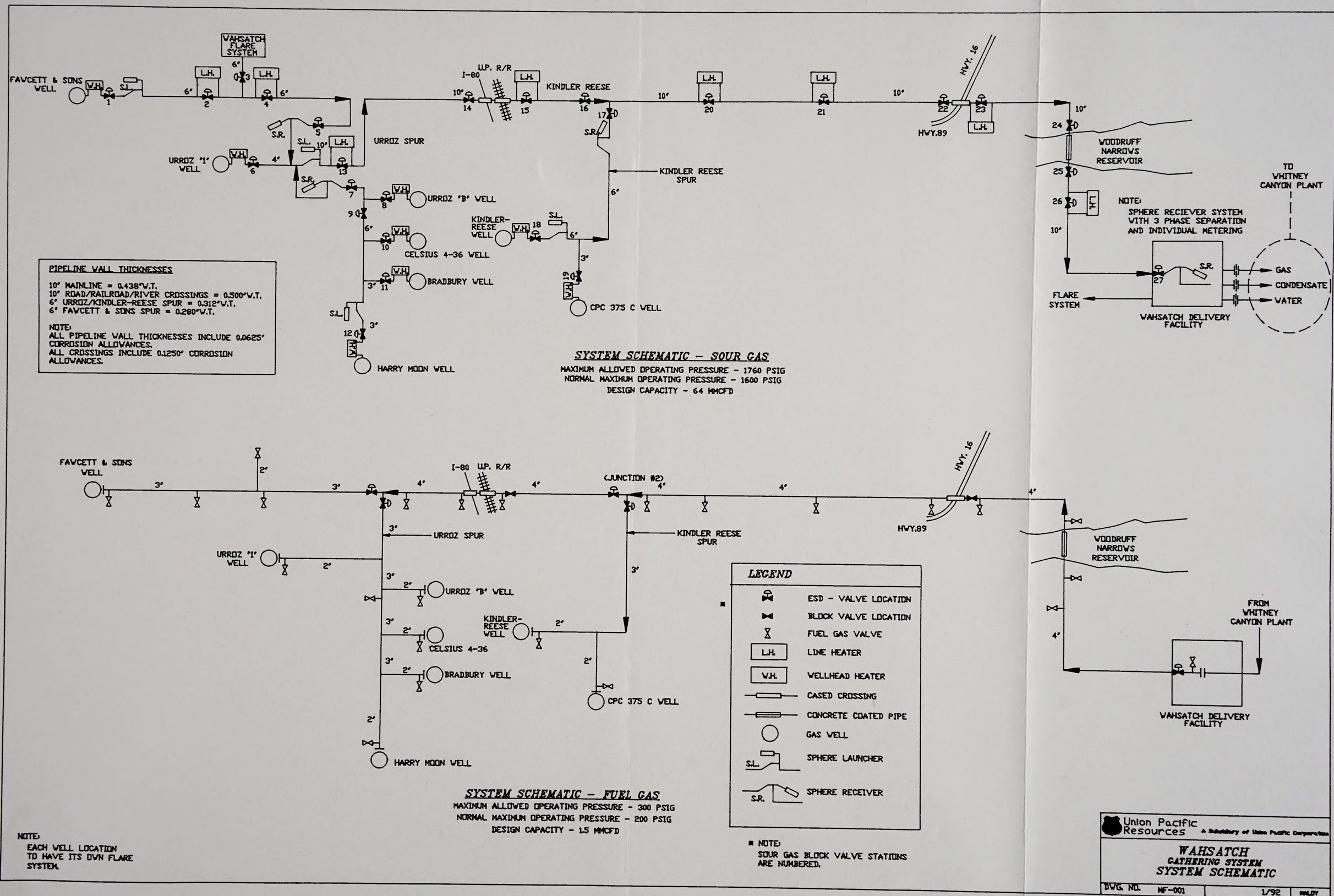
SCALE: 1" = 80'

APPENDIX D.

Systems Schematic



WAHSATCH FLARE SYSTEM
FAWCETT & SONS WELL
W.H.
S.L.
L.H.
S.R.
URROZ "1" WELL
URROZ SPUR
I-80
U.P. R/R
KINDLER REESE
KINDLER REESE SPUR
KINDLER-REESE WELL
URROZ "B" WELL
CELSIUS 4-36 WELL
BRADBURY WELL
HARRY MOON WELL
CPC 375 C WELL
HWY. 16
HWY.89
WOODRUFF NARROWS RESERVOIR
TO WHITNEY CANYON PLANT
NOTE:
SPHERE RECIEVER SYSTEM WITH 3 PHASE SEPARATION AND INDIVIDUAL METERING
FLARE SYSTEM
GAS
CONDENSATE
WATER
WAHSATCH DELIVERY FACILITY
PIPELINE WALL THICKNESSES
10" MAINLINE = 0.438"W.T.
10" ROAD/RAILROAD/RIVER CROSSINGS = 0.500"W.T.
6" URROZ/KINDLER-REESE SPUR = 0.312"W.T.
6" FAWCETT & SONS SPUR = 0.280"W.T.
NOTE:
ALL PIPELINE WALL THICKNESSES INCLUDE 0.0625" CORROSION ALLOWANCES.
ALL CROSSINGS INCLUDE 0.1250" CORROSION ALLOWANCES.
SYSTEM SCHEMATIC - SOUR GAS
MAXIMUM ALLOWED OPERATING PRESSURE - 1760 PSIG
NORMAL MAXIMUM OPERATING PRESSURE - 1600 PSIG
DESIGN CAPACITY - 64 MMCFD
FAWCETT & SONS WELL
I-80
U.P. R/R
(JUNCTION #2)
URROZ SPUR
KINDLER REESE SPUR
URROZ "1" WELL
URROZ "B" WELL
CELSIUS 4-36
BRADBURY WELL
HARRY MOON WELL
CPC 375 C WELL
HWY. 16
HWY.89
WOODRUFF NARROWS RESERVOIR
FROM WHITNEY CANYON PLANT
WAHSATCH DELIVERY FACILITY
LEGEND
ESD - VALVE LOCATION
BLOCK VALVE LOCATION
FUEL GAS VALVE
LINE HEATER
WELLHEAD HEATER
CASED CROSSING
CONCRETE COATED PIPE
GAS WELL
SPHERE LAUNCHER
SPHERE RECEIVER
SYSTEM SCHEMATIC - FUEL GAS
MAXIMUM ALLOWED OPERATING PRESSURE - 300 PSIG
NORMAL MAXIMUM OPERATING PRESSURE - 200 PSIG
DESIGN CAPACITY - 1.5 MMCFD
NOTE:
EACH WELL LOCATION TO HAVE ITS OWN FLARE SYSTEM.
* NOTE:
SOUR GAS BLOCK VALVE STATIONS ARE NUMBERED.
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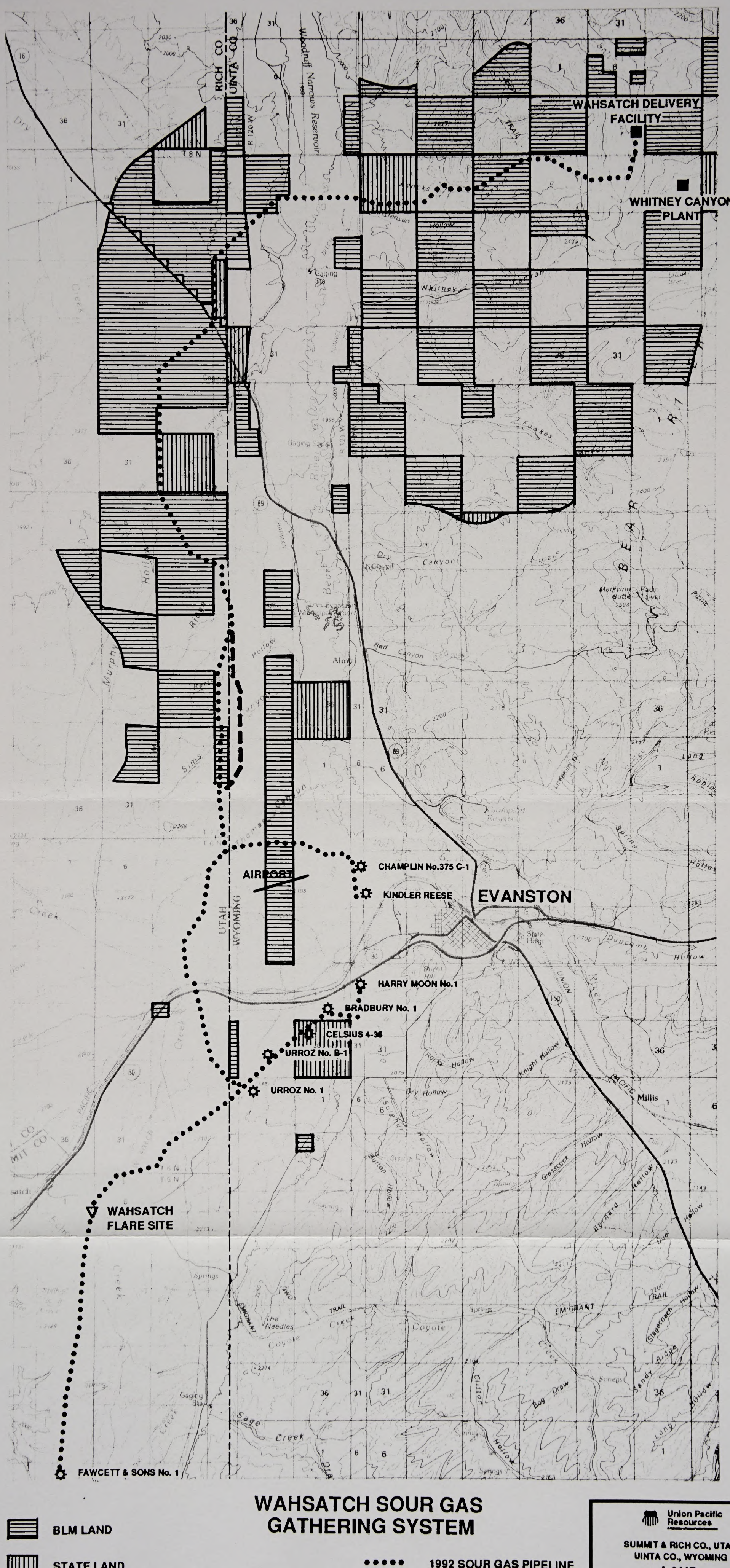
WAHSATCH
GATHERING SYSTEM
SYSTEM SCHEMATIC
DWG. NO. MF-001
1/92
MALOY

APPENDIX E.

Land Ownership



WAHSATCH SOUR GAS GATHERING SYSTEM

BLM LAND

STATE LAND

PRIVATE LAND

1992 SOUR GAS PIPELINE

1984 ALIGNMENT

Union Pacific Resources

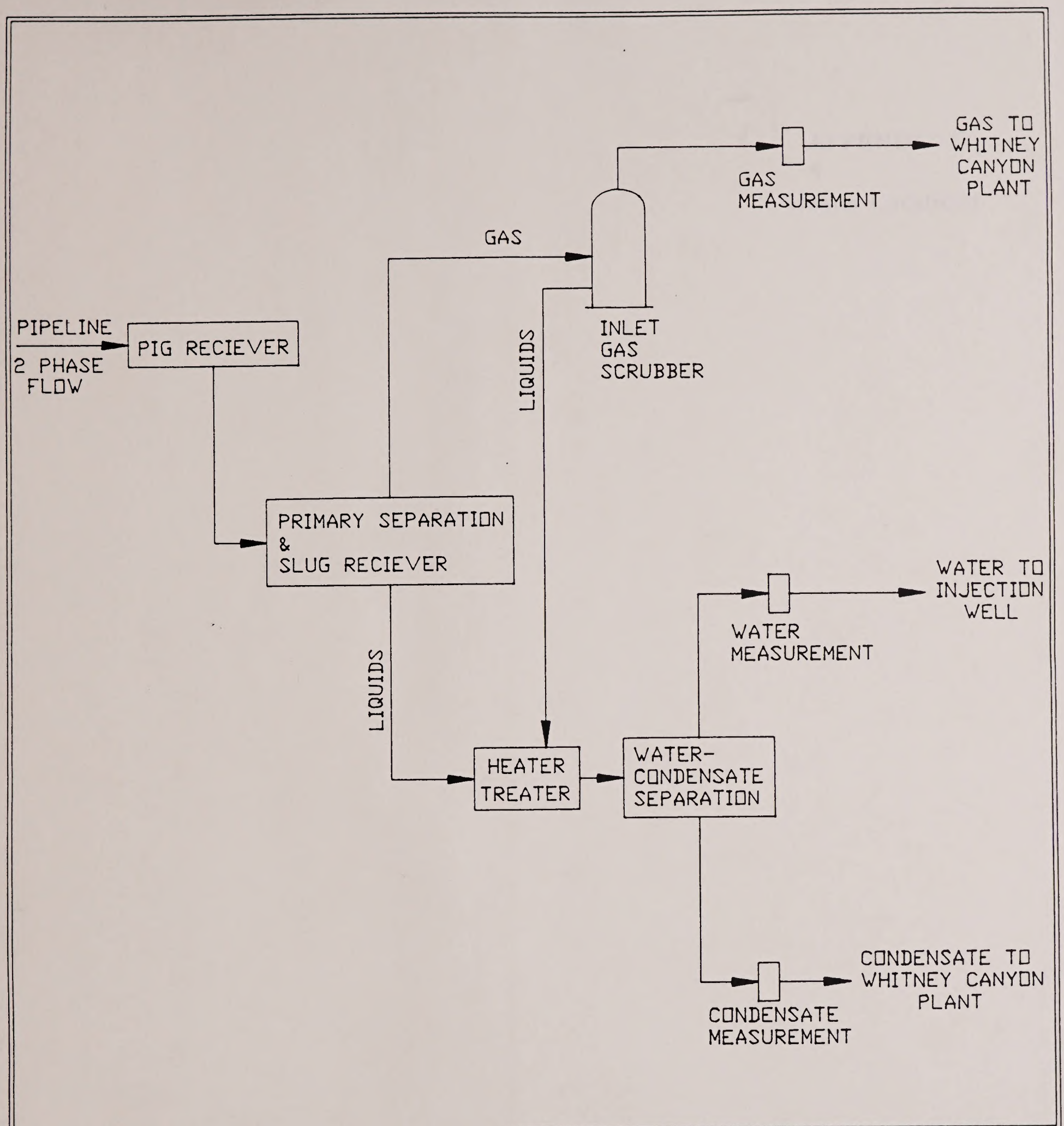
SUMMIT & RICH CO., UTAH
UINTA CO., WYOMING

LAND OWNERSHIP MAP

KILOMETER 0 1 2 3
MILE 0 1 2

APPENDIX F.

Wahsatch Delivery Facility Schematic



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PROJECT
WAHSATCH GATHERING SYSTEM
WAHSATCH DELIVERY FACILITY

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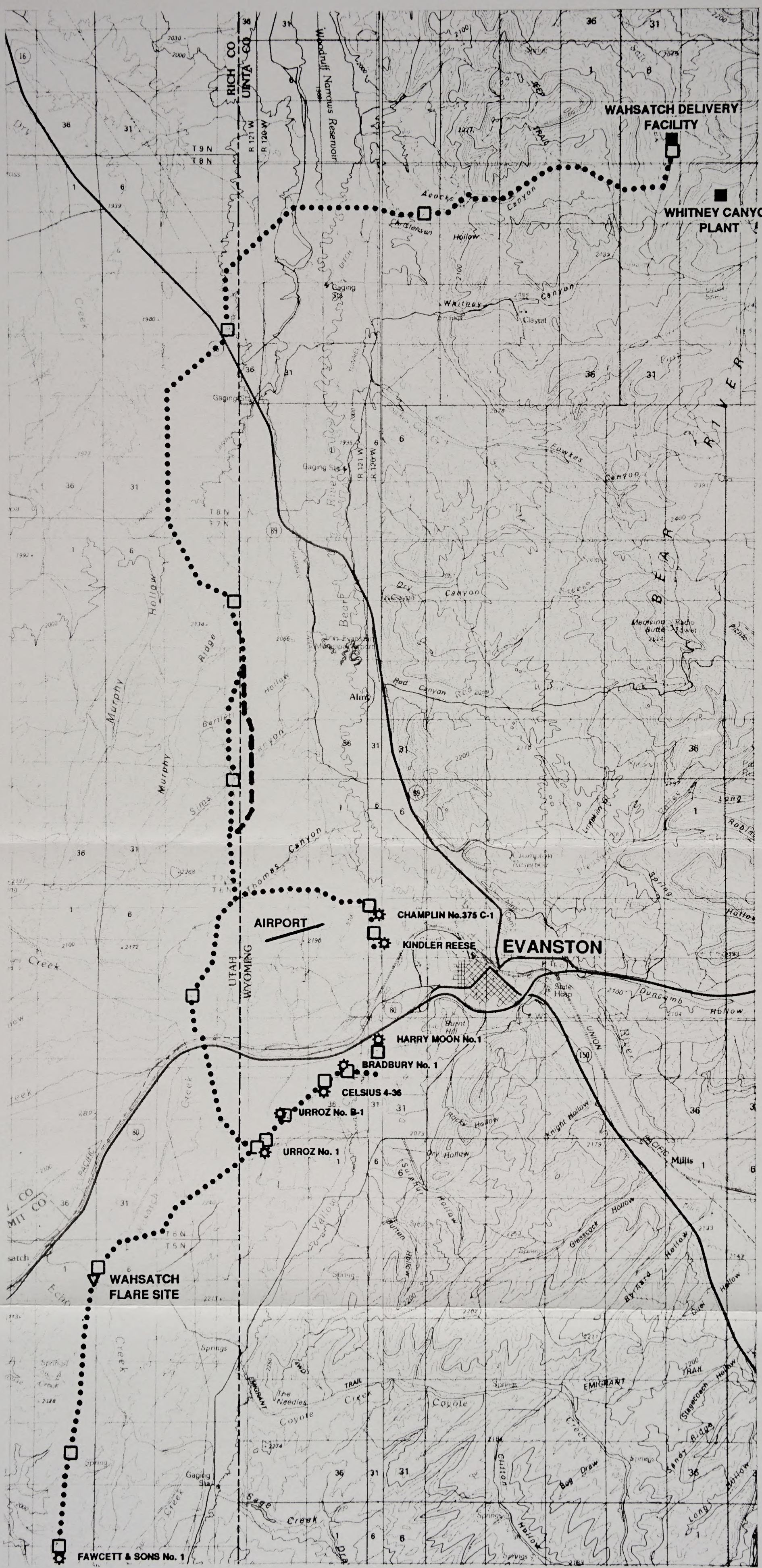
APPENDIX G.

Heater Locations



WAHSATCH SOUR GAS GATHERING SYSTEM

●●●●● 1992 SOUR GAS PIPELINE

▬ ▬ 1984 ALIGNMENT

□ HEATER LOCATIONS

Union Pacific Resources

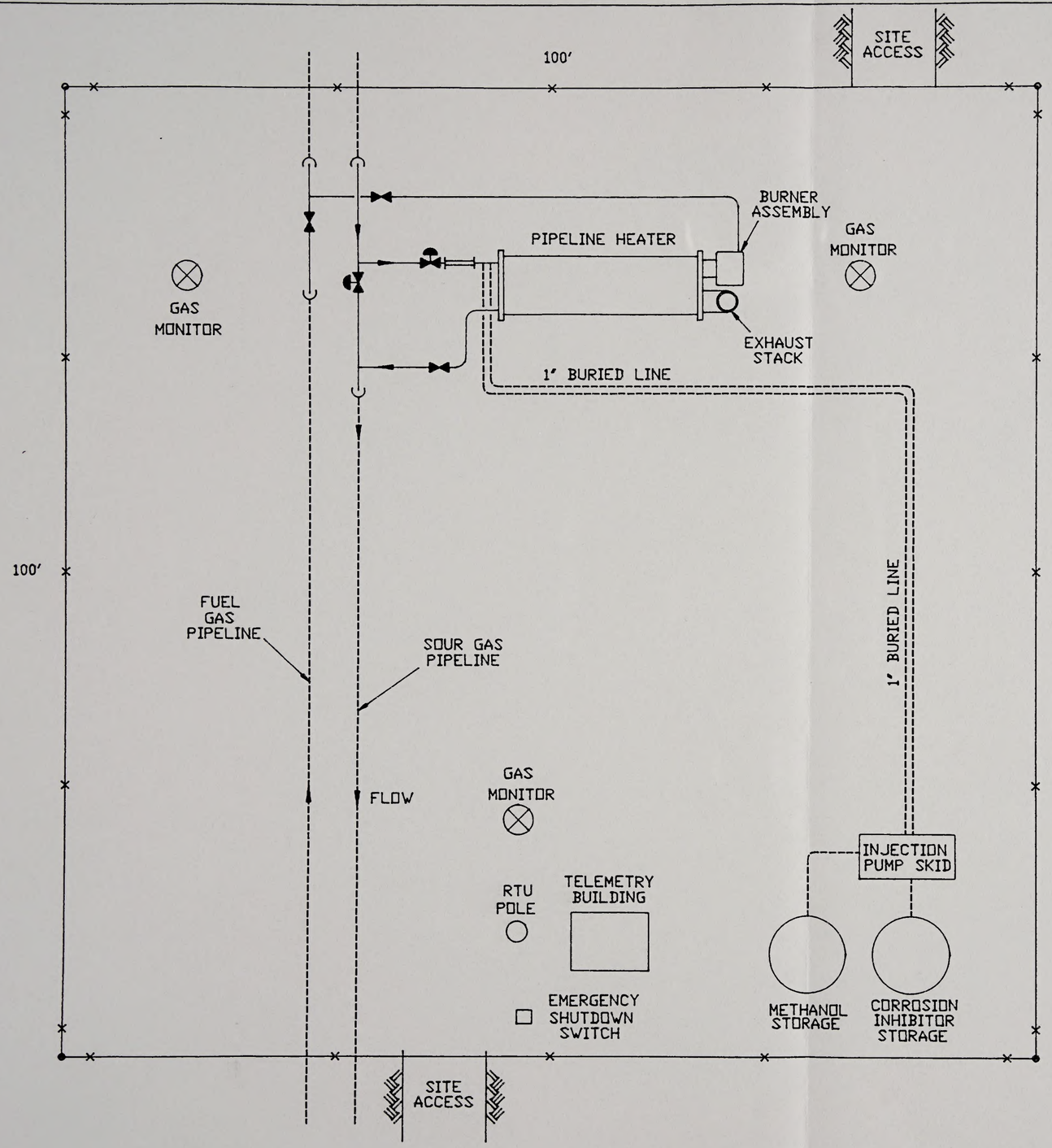
SUMMIT & RICH CO., UTAH
UINTA CO., WYOMING

HEATER LOCATIONS

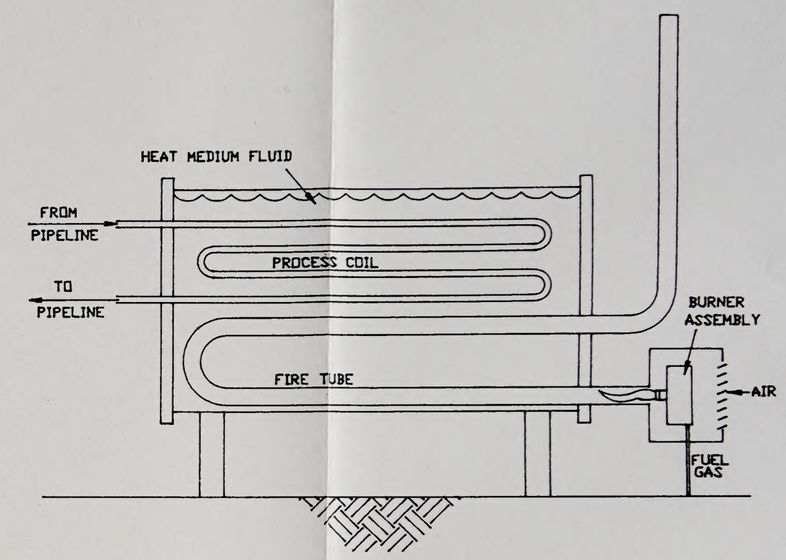
KILOMETER 0 1 2 3
MILE 0 1 2

APPENDIX H.

Line Heater/Emergency Shut Down Valve Configurations



PLAN VIEW



INDIRECT HEATER ELEVATION

LEGEND

- ESD VALVE
- BLOCK VALVE
- SPOOL PIECE (CORROSION MONITORING)

NOTE: NOT TO SCALE

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WAHSATCH GATHERING SYSTEM

PROJECT
TYPICAL PIPELINE HEATER & ESD CONFIGURATION

DATE	DWG. NO.	PAGE OF
FEB. 1992	WGSTPH	1 1

APPENDIX I.

Risks by Various Causes, H_2S Effects, and Isopleth Map

INDIVIDUAL RISK OF EARLY FATALITY BY VARIOUS CAUSES

Hazard*	Approximate Individual Risk of Early Fatality	
	Probability/Year	One Chance in
Heart disease	3.12×10^{-3}	320
Cancer	1.96×10^{-3}	510
All accidents	3.90×10^{-4}	2,560
Motor vehicles	1.98×10^{-4}	5,030
Homicides	8.66×10^{-5}	11,500
Drowning	2.09×10^{-5}	47,600
Fires, burns	1.93×10^{-5}	51,600
Release of gas from Wahsatch pipeline/well network (maximum risk level - on pipeline center or wellhead	5.20×10^{-6}	192,300
Civil aviation	5.19×10^{-6}	192,600
Water transport	3.90×10^{-6}	256,000
Railroads	2.56×10^{-6}	389,000
Lightning	4.06×10^{-7}	2,454,000
Bites and stings	2.79×10^{-7}	3,570,000
Release of gas from Wahsatch pipeline/well network (risk level - 330 feet either side of pipeline or wellhead)	2.00×10^{-7}	5,000,000
Release of gas from Wahsatch pipeline/well network (risk level - 990 feet either side of pipeline or wellhead)	2.50×10^{-9}	400,000,000

*Figures presented for various day-to-day hazards reflect national statistics. Probability of a fatality for each of these hazards may vary locally.

PHYSIOLOGIC RESPONSE TO VARIOUS CONCENTRATIONS OF HYDROGEN SULFIDE (H_2S)

H_2S Concentration (ppm)	Duration of Exposure						
	0-2 min	2-15 min	15-30 min	30 min to 1 hr	1-4 hr	4-8 hr	8-48 hr
5-100				Mild conjunctivitis, respiratory tract irritation.			
100-150		Coughing, irritation of eyes, loss of sense of smell	Disturbed respiration, pain in eyes, sleepiness.	Throat irritation.	Salivation and mucous discharge, sharp pain in eyes, coughing.	Increased symptoms*	Hemorrhage and death*
150-200		Loss of sense of smell.	Throat and eye irritation	Throat and eye irritation	Difficult breathing, blurred vision, light shy.	Serious irritating effect.*	Hemorrhage and death*
250-350	Irritation of eyes, loss of sense of smell	Irritation of eyes.	Painful secretion of tears, weariness.	Light shy, nasal catarrh, pain in eyes, difficult breathing.	Hemorrhage and death.*		
340-450		Irritation of eyes, loss of sense of smell	Difficult respiration, coughing, irritation of eyes.	Increased irritation of eyes and nasal tract, dull pain in head, weariness, light shy	Dizziness, weakness, increased irritation, death.	Death.*	
500-600	Coughing, collapse, and unconsciousness.	Respiratory disturbances, irritation of eyes, collapse.*	Serious eye irritation, light shy, palpitation of heart, a few cases of death.	Severe pain in eyes and head, dizziness, trembling of extremities, great weakness and death.*			
600 or greater	Collapse,* unconsciousness, death.						

*Data secured from experience on dogs which have a susceptibility similar to men.

Source: National Safety Council data sheet D-chem 15

RADIUS OF EXPOSURE - ISOPLETH MAP

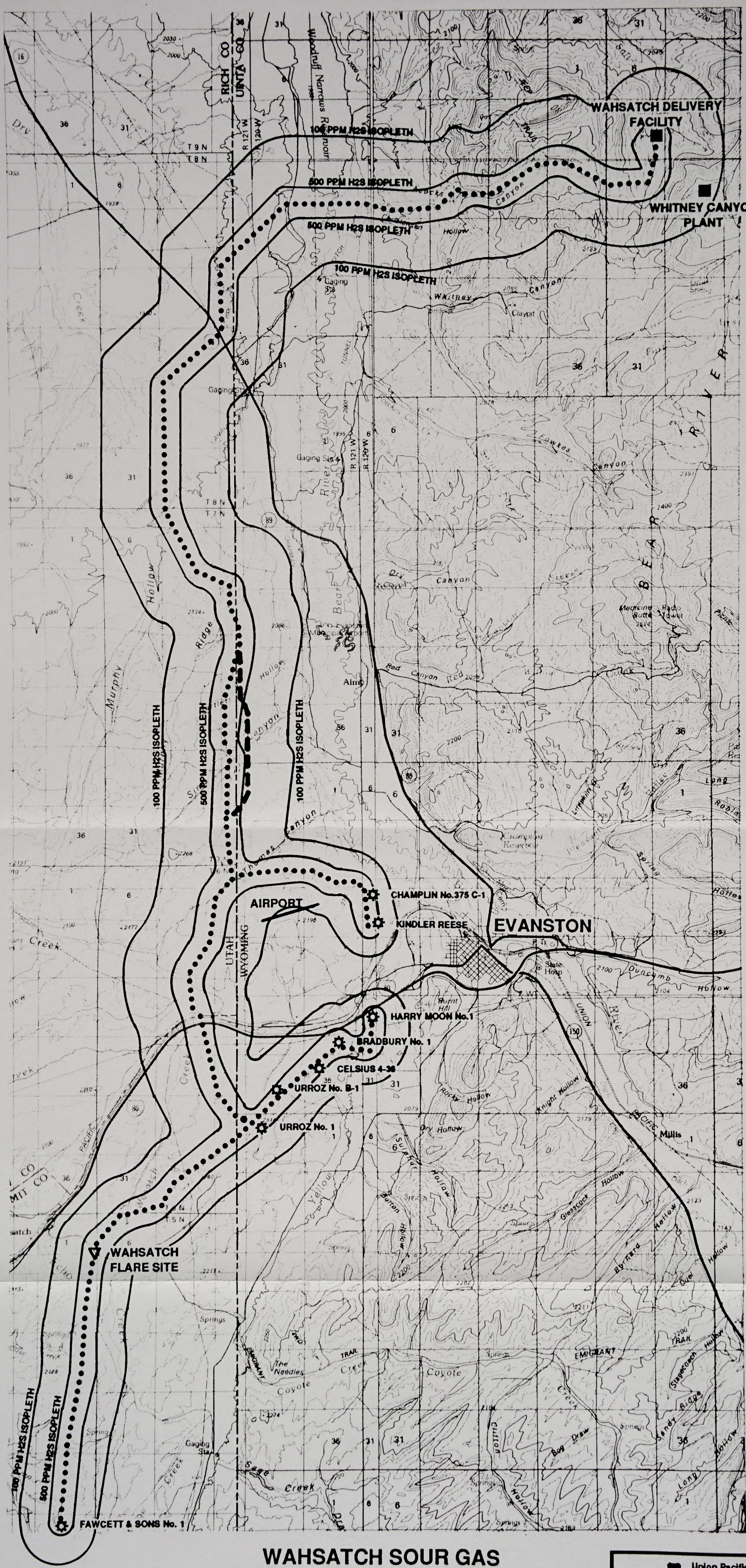
As described in the text, BLM Onshore Order No. 6 requires the preparation of a Public Protection Plan for oil and gas systems involving H_2S when homes, businesses, churches, schools, and other areas regularly frequented by people are located within a Radius of Exposure (ROE) to potential H_2S concentrations of 100 ppm or greater. The Order requires delineation of the radius of exposure for H_2S concentrations of 500 ppm and 100 ppm.

Dispersion calculations were made to determine the ROE distances associated with the WGS. Calculations were made for accidental pipeline releases as well as for wellhead releases. Under Onshore Order No. 6, the release rate of gas containing H_2S is defined to be the maximum flow at that point in the system at the time of release (the place and time of an accident). For the pipeline sections, this would correspond to the gas flow in the pipeline. For the wells, this would correspond to the Absolute Open Flow of the well.

Gas in the WGS contains approximately 15 percent H_2S. To calculate the ROE for gas with this H_2S content, Onshore Order No. 6 requires use of a dispersion technique that takes into account representative wind speed, direction, atmospheric stability, complex terrain, and other dispersion factors. Dispersion analysis calculations for this project are performed with modelling used in the risk analysis, momentum jet dispersion modelling with components based on DEGADIS, a model developed under an Environmental Protection Agency/Gas Research Institute grant for calculating dispersion of dense (heavier than air) gases. Full descriptions of the model, algorithms, and the validation studies are available in the Hazards Analysis/Risk Analysis Study available from the BLM's Rock Springs District Office.

Using the flow rates and dispersion models defined above, dispersion calculations were made to the 100 and 500 ppm H_2S concentration levels under low wind (1 mph) and stable (Pasquill stability class F) conditions, a reflection of worst case atmospheric conditions. The calculations were made for all pipeline sections and well sites. The ROE limits (defined by the 100 and 500 ppm H_2S levels) were overlaid onto the overall pipeline route. This overlay is displayed on the following Isopleth Map.

At the Harry Moon and Bradbury wells, closest to occupied structures, the 100 ppm ROE extends out from the wells 2,100 and 2,770 feet respectively. The ROE does not address the probability of concentrations of 100 ppm being actually experienced within the ROE. The risk of exposure at certain distances from wells and the pipeline were the subject of separate independent analysis. The previous two tables in this appendix display health effects of various H_2S concentrations under different lengths of exposure, and results of the risk analysis for various distances from wells and the pipeline. What the 100 ppm ROE isopleth does establish is the area in which prudent emergency response and public protection planning would occur to provide a margin of safety for public health and protection.



WAHSATCH SOUR GAS GATHERING SYSTEM

●●●●● 1992 SOUR GAS PIPELINE

▬▬ 1984 ALIGNMENT

—— H2S ISOPLETH

Union Pacific Resources

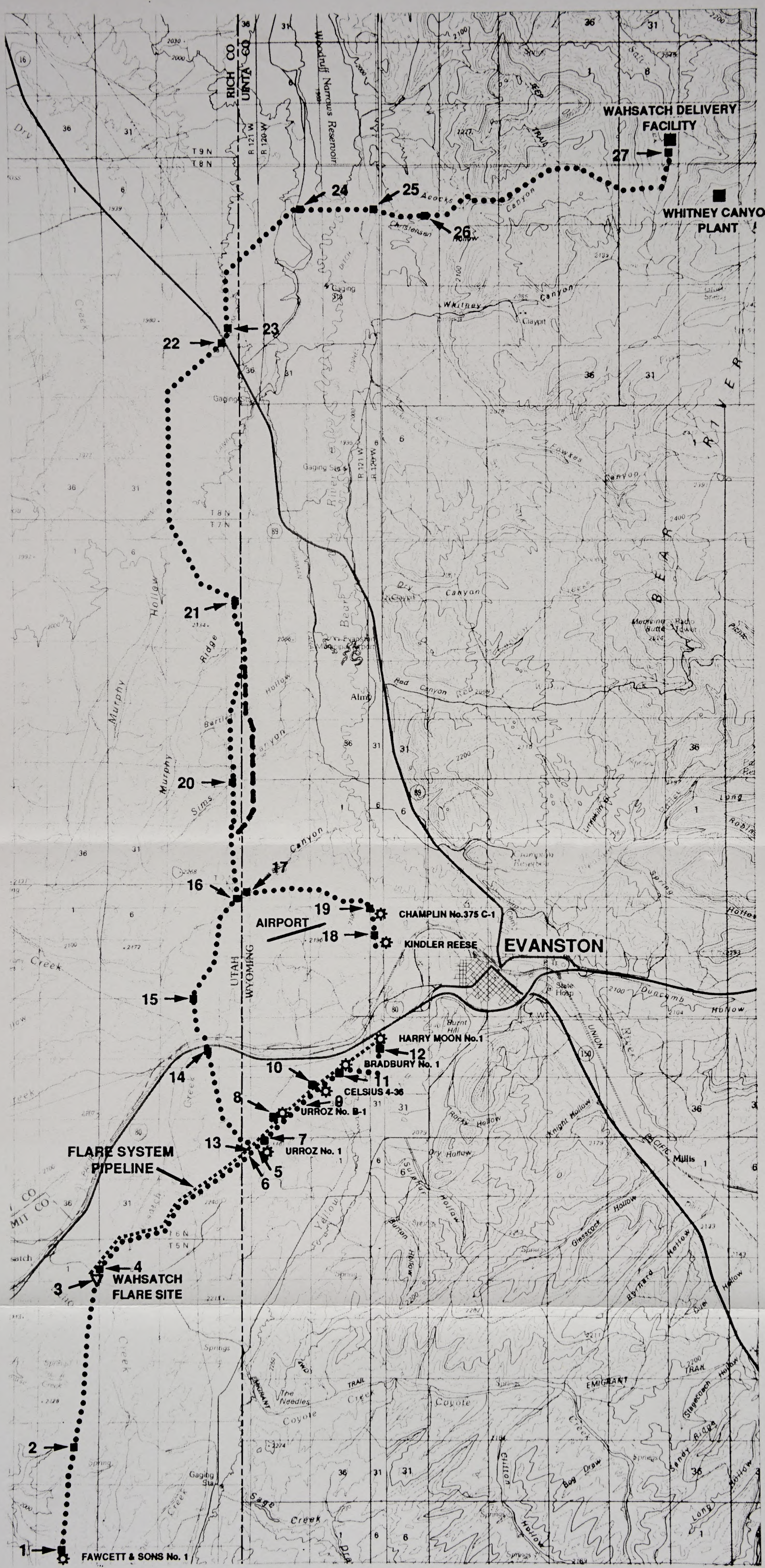
SUMMIT & RICH CO., UTAH
UINTA CO., WYOMING

SOUR GAS ISOPLETH MAP

KILOMETER 0 1 2 3
MILE 0 1 2

APPENDIX J.

Emergency Shut Down Valve Locations and the Wahsatch Flare Site



WAHSATCH SOUR GAS GATHERING SYSTEM

●●●●● 1992 SOUR GAS PIPELINE

▬▬ 1984 ALIGNMENT

→■ ESD VALVE (numbered)

▪▪▪▪▪▪▪ FLARE SYSTEM PIPELINE

Union Pacific Resources

SUMMIT & RICH CO., UTAH
UINTA CO., WYOMING

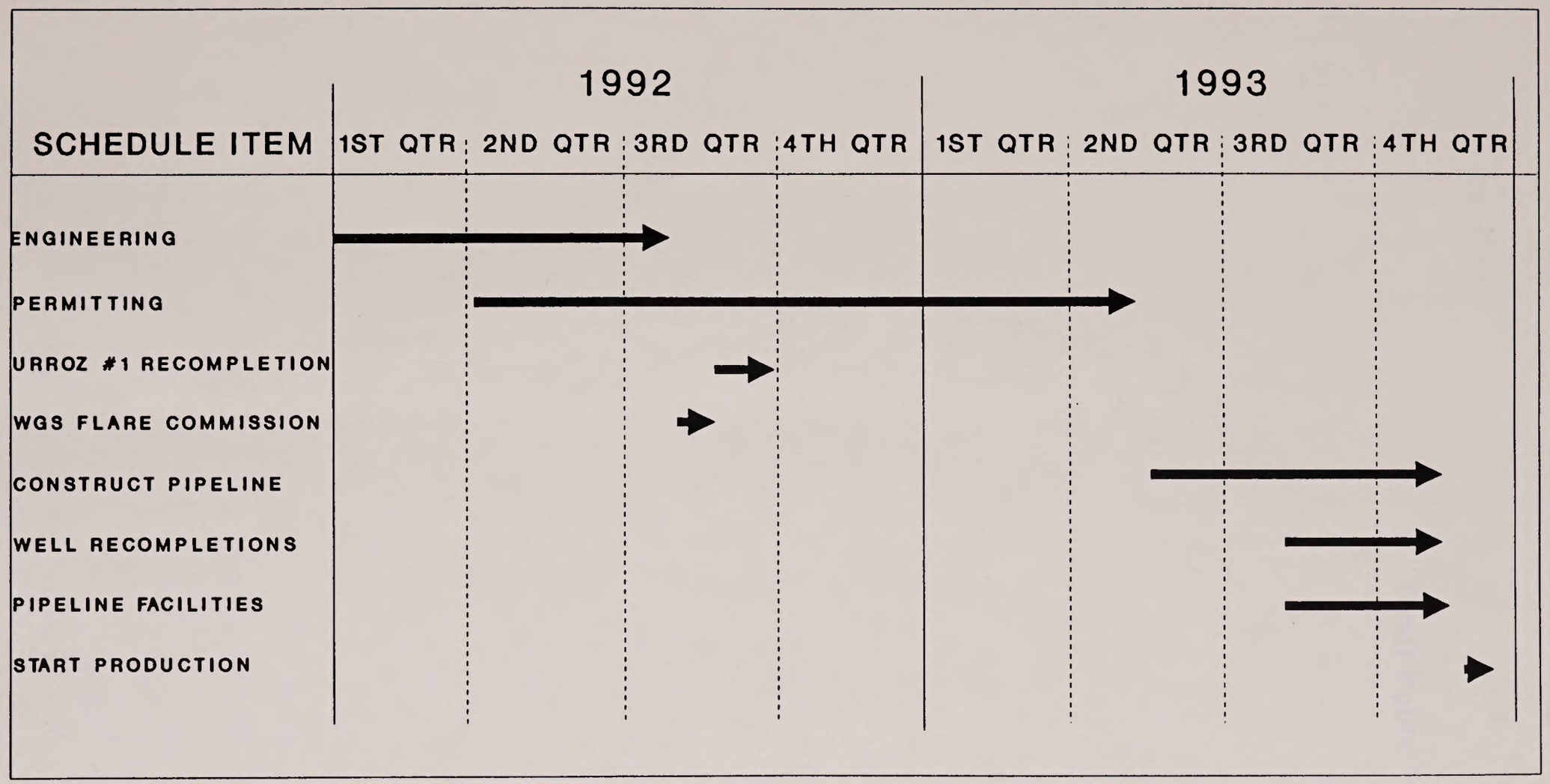
ESD Valve Locations & Flare System Pipeline

KILOMETER 0 1 2 3
MILE 0 1 2

APPENDIX K.

Project Schedules

WAHSATCH GATHERING SYSTEM
PROPOSED ACTIVITY SCHEDULE



APPENDIX L.

Draft Public Involvement Plan

DRAFT PUBLIC INVOLVEMENT PLAN

Union Pacific Resources Company is committed to providing complete information on the Wahsatch Gathering System to the citizens and public officials of Uinta County, Wyoming and Rich and Summit Counties, Utah. The following public Involvement Plan for the Wahsatch Gathering system describes the kinds of meetings and information tools UPRC will use in the public information process.

PUBLIC INFORMATION -- PRIMARY COMPONENTS

The primary component of the public involvement process for the Wahsatch Gathering System will be informational meetings. UPRC will participate in several kinds of meetings to afford many opportunities for the public and officials to obtain information and provide comment.

- **Preliminary Meetings** with elected and public officials;
- **Local Governmental Agency Meetings** with the membership of commissions, boards, and councils;
- **General Public Informational Meetings** with interested citizens;
- **Ongoing Meetings/Continuing Public Interaction** with civic organizations, smaller groups, and individuals, and with those who request additional meetings or information, or opportunities to comment on the project;
- **Permitting and Regulatory Process Meetings** in which UPRC will cooperate with and participate in public meetings conducted through the permitting and regulatory process of affected agencies.

Throughout the public information process, UPRC will use the following information tools:

- **BLM's Project Update**, the comprehensive, technical project description of UPRC's proposed Wahsatch Gathering System with references to the 1984 EA;
- **Public information booklet**, a condensed description of the WGS project intended for use with the general public;
- **Public safety information booklet**, description of the hazards of hydrogen sulfide gas and the safety measures built into the WGS system; and,

- **Educational video tool** dealing with the issues presented in the public information and safety booklets.

PHASE I: PRELIMINARY MEETINGS

During the first phase of the public involvement plan (beginning April 13), UPRC will hold preliminary meetings with the following officials:

- Mayor of Evanston;
- Chairman of the Evanston City Council;
- Evanston City Planner;
- Chair, Evanston Planning and Zoning Commission;
- Chair, Evanston Hospital Board; and,
- City/County Emergency Management Coordinator.

UPRC will also meet with officials of Uinta, Rich, and Summit Counties including:

- Chairs of the three County Commissions;
- Chairs of the Planning and Zoning Boards; and,
- County fire department officials.

At these meetings, UPRC will describe the WGS project and request to be scheduled on the boards' and commissions' regular meeting agendas. Also during this preliminary phase, UPRC will meet with Uinta County's state senator and representatives and the district representatives of Wyoming's federal Congressional delegation.

PHASE 2: LOCAL GOVERNMENT AGENCY MEETINGS

During the second phase of the public involvement process (beginning April 20), UPRC will participate in regular public meetings of the following:

- Uinta, Rich, and Summit County Boards of County Commissioners;
- Planning and Zoning Commissions for the three counties;
- The Evanston City Council; and,
- The Evanston Planning and Zoning Commission.

At these meetings UPRC will fully describe the WGS project and will request the cooperation of these entities in facilitating public comment and review, planning for governmental reviews and permitting and regulatory processes, and planning emergency response procedures for the WGS project.

During this phase, UPRC will notify the media of the proposed project and make a public announcement of the project.

PHASE 3: GENERAL PUBLIC INFORMATION MEETINGS

During the third phase of the public information process, UPRC will invite the general public to attend three initial public discussion meetings to be held in three locations in Uinta County. General public meetings will also be advertised and held in Rich and Summit Counties, Utah.

At these meetings, UPRC will provide the general public with information on the WGS project to better facilitate informed public response and comment. These open discussion meetings will be structured in a manner to provide for interaction between the general public and UPRC.

PHASE 4: ONGOING MEETINGS/CONTINUING PUBLIC INTERACTION

During the fourth phase of the public involvement process (beginning late April/early May), UPRC will meet with civic organizations and with smaller groups of citizens from those geographic areas located near WGS facilities. UPRC will discuss all aspects of the WGS project and address the concerns and questions of these community groups.

UPRC will carefully monitor citizen response at these meetings and will schedule additional meetings with any group or individual that requests more information or additional opportunities for comment on the WGS project.

UPRC has established and will maintain an operations/public communications office in Evanston for the development, construction, and operation of the WGS. This office will be available to respond to all requests for information, briefings, or small group or individual meetings.

PHASE 5: PERMITTING AND REGULATORY PROCESSES MEETINGS

Throughout project reviews and permitting processes, UPRC will participate in public meetings conducted through the permitting and regulatory processes of affected agencies. UPRC will cooperate with affected agencies and their determinations of the level, amount, and type of UPRC participation.

In addition to the public involvement plan and UPRC's participation in permitting and regulatory meetings, the community will also be involved through its emergency response providers and affected jurisdictions in preparing an emergency response plan. Those people who may work or live near the WGS will be personally contacted about the plan, its purpose, and how and when it would be implemented.

UPRC intends through this Public Involvement Plan to cooperate with and comply with involved agencies as they proceed with their project reviews and to provide information to and respond to questions from the affected publics. UPRC will encourage an open communication process to invite public interaction, review, and comment, and to create a constructive and on-going dialogue with the citizens and officials of Uinta, Rich, and Summit Counties.

APPENDIX M.

1984 BLM Right-of-Way Grant and Stipulations

1984 RIGHT-OF-WAY GRANT

Following is the right-of-way grant and stipulations attached thereto (Exhibit A) as issued by the Bureau of Land Management to Amoco Production Company in 1984. In transferring the right-of-way grant to Union Pacific Resources Company, the BLM would make revisions in the grant terms and stipulations to reflect current policies, regulations, rentals, dates, and UPRC's Construction and Operations Plan. For example, stipulations and land descriptions for a 4.2 kv powerline would be deleted. This powerline is not included in UPRC's proposal. Also, as proposed by UPRC, the right-of-way would be used as a gathering system pipeline. Therefore, provisions under C in Exhibit A may be modified or deleted.

RIGHT-OF-WAY

Section A

1. There is hereby granted, pursuant to Section 28 of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 185), a nonexclusive, nonpossessory right-of-way to:

Amoco Production Company
P.O. Box 829
Evanston, Wyoming 82930

In case of change of address the Holder shall immediately notify the Authorized Officer.

2. To use, subject to terms and conditions set out below, the following Federal land:

Uinta County, Wyoming

Powerline

T. 15 N., R. 121 W., 6th P.M.
Section 11: S½NE¼, NE¼SE¼

Pipeline

T. 15 N., R. 121 W., 6th P.M.
Section 11: S½SE¼

T. 17 N., R. 120 W., 6th P.M.
Section 14: N½NE¼, SW¼NE¼, S½NW¼, NW¼SW¼
Section 18: Lots 14, 15

T. 17 N., R. 121 W., 6th P.M.
Section 24: Lots 7, 8, 10

Rich County, Utah

T. 7 N., R. 8 E., Salt Lake Meridian
Section 5: Lot 4, S½NW¼, NE¼SW¼, W½SE¼
Section 8: NE¼NE¼

T. 8 N., R. 8 E., Salt Lake Meridian
Section 9: Lot 4
Section 20: NE¼NE¼, S½NE¼, NE¼SW¼, S½SW¼, NW¼SE¼
Section 21: Lot 1
Section 29: W½NW¼

3. Description of the right-of-way facility and purpose:

The right-of-way is to be used for construction, operation, and maintenance of a 10-inch buried H_2S gas product line as described above and a 4.2 KV power line located also in the above described subdivision. The width of the right-of-way is 50 feet with an additional 50 feet for temporary construction area as described. The length of the pipeline crossing public land is approximately six and one half miles long, 13,200 feet being in Uinta County, Wyoming and 21,300 feet being in Rich County, Utah.

A map showing the location of the right-of-way over the above described land is located in the case file at the Kemmerer Resource Area.

Section B.

1. The right-of-way Holder agrees to comply with all the applicable regulations contained in 43 CFR 2880.

2. This grant is subject to all valid rights existing on the effective date of this grant.

3. There is reserved to the Authorized Officer, the right to grant additional rights-of-way or permits for compatible use on, over, under, or adjacent to the land involved in this grant.

4. The rights-of-way shall be relinquished to the United States if the authorized uses are no longer needed.

5. Compliance will be in accordance with the terms and conditions as specified herein and in Exhibit "A" (6 pages), attached hereto and made a part hereof.

6. Rental:

In consideration for this use, the Holder shall pay to the Bureau of Land Management, the sum of Ten Thousand Four Hundred Fifty Dollars and No/100 ($10,450.00) for the period from August 13, 1984, to August 12, 1985, and thereafter annually Ten Thousand Four Hundred Fifty Dollars and No/100 ($10,450.00), $4,000.00 for the Uinta County, Wyoming portion and $6,450.00 for the Rich County, Utah portion: Provided, however, charges for this use may be made or readjusted whenever necessary to place the charges on the basis of fair market value of use authorized by this grant. This right-of-way grant is not in force unless the Holder has paid the rental fee in advance.

7. This right-of-way grant shall terminate thirty (30) years from the effective date of this grant unless prior thereto it is relinquished, abandoned, terminated, or otherwise modified pursuant to the terms and conditions of this grant or of any applicable Federal law or regulation.

This right-of-way grant may be renewed. If renewed, the right-of-way will be subject to regulations existing at the time of renewal, and such other terms and conditions deemed necessary to protect the public interest.

Section C.

Signature blocks and signatures - Amoco Production Company, BLM Bear River Resource Area, and BLM Rock Springs District Office. Right-of-way grant executed August 24, 1984.

EXHIBIT "A"

STIPULATIONS FOR W-78405 AND U-51457

A. Holder shall be fully liable to the United States for any damage or injury incurred by the United States in connection with the use and occupancy of the right-of-way by a Holder. Holder shall be held liable for any activity within a right-of-way or permit area which the Authorized Officer determines presents a foreseeable hazard of risk or damage or injury to the United States. The Holder or its subcontractors will be held liable as a result of injury, loss of life or damage to property in connection with construction, operation, maintenance, or termination of the right-of-way grant. Strict liability is not imposed for damage or injury resulting primarily from an act of war or the negligence of the United States. To the extent consistent with other laws, strict liability shall extend to costs incurred by the United States for control and abatement of conditions, such as fire or oil spills, which threaten lives, property, or the environment, regardless of whether the threat occurs on areas that are under Federal jurisdiction. The maximum limitation shall not exceed $1,000,000 for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

In any case where strict liability is imposed and the damage or injury was caused by a third party, the rules of subrogation shall apply in accordance with the laws of the jurisdiction in which the damage or injury occurred.

Holder shall be fully liable for injuries or damage to third parties resulting from Holder's activities or facilities on lands under Federal jurisdiction in which the damage or injury occurred.

Holder shall fully indemnify or hold harmless the United States for liability, damage, or claims arising in connection with the Holder's use and occupancy of the rights-of-way.

All owners of any interest in, and all affiliates or subsidiaries of Holder except for corporate stockholders, shall be jointly and severally liable to the United States in the event that a claim cannot be satisfied by the Holder.

The provision in this section for a remedy is not intended to limit or exclude any other remedy.

B. The Holder shall comply with the applicable Federal and State laws and regulations concerning the use of pesticides (i.e., insecticides, herbicides, fungicides, rodenticide, and other similar substances) in all activities/operations under this grant. The Holder shall obtain from the Authorized officer, approval of a written plan prior to the use of such substances. The plan must provide the type and quantity of material to be used; the pest, insect, fungus, etc., to be controlled; the method of application; the location of or storage and disposal of containers; and other information that the Authorized Officer may require. The plan should be submitted no later that December 1 of any calendar year that covers the proposed activities for the next fiscal year (i.e., December 1, 1983, deadline for a fiscal year 1985 action). If need for emergency use of pesticides is identified, the use must be approved by the Authorized Officer. The us of substances on or near the right-of-way shall be in accordance with the approved plan. A pesticide shall not be used if the Secretary of the Interior has prohibited its use. A pesticide shall be used only in accordance with the registered uses and within other limitations if the Secretary imposed limitations. Pesticides shall not be permanently stored on public lands authorized for use under this grant.

C. Common Carrier Stipulation for a Mixed Oil and Gas Products Pipeline:

Pipelines and related facilities authorized under this section shall be constructed, operated, and maintained as common carriers. The owners or operators of pipelines subject to this section shall accept, convey, transport, or purchase without discrimination all oil and gas delivered to the pipeline without regard to whether such oil or gas was produced on Federal or non Federal lands. In the case of oil or gas produced from Federal lands or from the resources on the Federal lands in the vicinity of the pipeline, the Secretary may, after a full hearing with due notice thereof to the interested parties and a proper finding of facts, determine the proportional amounts to be accepted, conveyed, transported, or purchased. The common carrier provisions of this section shall not apply to any natural gas pipeline operated by any person subject to regulations under the Natural Gas Act or by any public utility subject to regulations by a State or municipal regulatory agency having jurisdiction to regulate the rates and charges for the sale of natural gas to consumers within the State or municipality. Where natural gas not subject to State regulatory or conservation laws governing its purchase by pipelines is offered for sale, each such pipeline shall purchase, without discrimination, any such natural gas produced in the vicinity of the pipeline. Whenever the Secretary has reason to believe that any owner or operator subject to this section is not operating any oil or gas pipeline in complete accord with its obligations as a common carrier hereunder, he may request the Attorney General to prosecute an appropriate proceeding before the Interstate Commerce Commission or Federal Energy Regulatory Commission or any appropriate State agency or the United States district Court for the district in which

the pipeline or any part thereof is located, to enforce such obligation or to impose any penalty provide therefor, or the Secretary may, by proceeding as provided in this section, suspend or terminate the said grant or right-of-way for noncompliance with the provisions of this section.

D. The Holder agrees not to exclude any person from participating in employment or procurement activity connected with this grant on the grounds of race, creed, color, national origin, and sex, and to ensure against such exclusions, the Holder further agrees to develop and submit to the proper reviewing official specific goals and timetables with respect to minority and female participation in employment and procurement activity connect with this grant. The Holder will take affirmative action to utilize business enterprises owned and controlled by minorities or women in its procurement practices connected with this grant. Affirmative action will be taken by the Holder to assure all minorities or women applicants full consideration of all employment opportunities connected with this grant. The Holder also agrees to post in conspicuous places on its premises which are available to contractors, subcontractors, employees, and other interested individuals, such as bidders, contractors, purchasers, and labor unions or representatives of workers with whom it has collective bargaining agreements, of the Holder's equal opportunity obligations.

E. Protection (Cultural Resources):

1. Before undertaking any activities that may disturb the surface of the lands, the Holder shall consult the Authorized Officer of the Bureau of Land Management (BLM) concerning the present status and findings of cultural inventories on the grant area. Where a need can be established by the Authorized Officer, the Holder shall conduct cultural inventories of the grant area in a manner specified by the Authorized Officer. Inventories shall be conducted by an appropriately qualified professional archaeologist, historian, or historical architect, approved by the Authorized Officer.

   Report of inventories shall be submitted to the Authorized Officer. The Holder shall protect all cultural resources as specified and shall not commence surface disturbing activities until permission to proceed is given by the Authorized Officer.

   The Holder shall protect all identified cultural resource properties that are evaluated as being significant, as determined by the authorized officer until the cultural resource mitigation measures can be implemented as part of an approved plan.

The cost of conducting the inventory, preparing reports, and carrying out mitigation measures shall be borne by the Holder.

If cultural resources are discovered during operation under this grant, the Holder shall immediately bring them to the attention of the Authorized Officer. The Holder shall not disturb such resources except as may be subsequently authorized. Within two (2) working days of notification, the Authorized Officer will evaluate or have evaluated, any cultural resources discovered and will determine if any action may be required to protect cultural resources discovered. The cost of data recovery for cultural resources discovered during operations shall be borne by the BLM unless otherwise specified by the Authorized Officer of the BLM. All cultural resources shall remain under the jurisdiction of the United States until ownership is determined under applicable law.

Protection (Paleontologic Resources):

2. Before undertaking any activities that may disturb the surface of the lands, the Holder shall contact the Authorized Officer of the Bureau of Land Management to determine whether it will be required of the Holder to conduct a paleontologic appraisal of the right-of-way that may be adversely affected by grant-related activities. The paleontologic appraisal shall be conducted by a qualified paleontologist, or other person, approved by the Authorized Officer. This paleontologic appraisal shall use the published literature and, where appropriate, field appraised to determine the surface occurrence of fossils of scientific significance. A report of the appraisal and recommendation for protecting or salvaging any surface fossils of significant scientific interest on the lands so identified shall be submitted to the Authorized Officer. The Holder shall, when necessary, undertake the measures provided in the approved plan to collect or otherwise protect any surface fossils of scientific significance. The holder shall not knowingly disturb, alter, destroy or take any surface fossils of scientific significance.

During operations or other activities related to the grant, the Holder shall not knowingly disturb, alter, destroy, or take any large and conspicuous fossils of scientific interest that may occur below the surface and shall consistent with economic and safety considerations, protect such fossils in conformance with the measures included in the approval of the plan.

The Holder shall immediately bring any such large, conspicuous fossils of scientific interest discovered in the subsurface, to the attention of the

Authorized Officer. Such fossils when discovered may be moved and operations may continue as long as the fossil or fossils would not be seriously damaged or destroyed. The Authorized Officer shall evaluate or have evaluated such discoveries brought to his attention and, within five (5) working days, shall notify the Holder what action shall be taken with respect to such discoveries.

All fossils of significant scientific interest shall remain under the jurisdiction of the United States until ownership is determined under applicable law. Copies of all paleontologic resource data generated as a result of the grant requirements shall be provided to the Authorized Officer.

The cost of any required paleontologic appraisals, surface collections of fossils, or salvage of any large, conspicuous fossils of scientific interest discovered during the operations shall be borne by the holder.

F. Holder shall conduct all construction, operations, maintenance, and termination activities associated with this grant in accordance with the construction and operation plan submitted in March 1984, which is the description of the proposed action (described in the Cave Creek Final EA pages 1-4 thru 1-47).

G. Holder shall contact the Authorized Officer or his representative prior to commencing any construction activities on this right-of-way. The Holder or his representative and all of his contractors or agents involved with construction under this right-of-way shall attend the conference. The Holder shall contact the Authorized Officer or his representative at least five (5) days prior to the anticipated start of construction to schedule this conference. The Authorized Officer is the BLM District Manager. His designated representative for this right-of-way crossing public land in Wyoming is:

Name and Title: **(BLM Kemmerer Resource Area)**
Address:

Telephone No.:

For the portion crossing public land in Utah, the designated representative is:
Name and Title: **(BLM Salt Lake District)**
Address:

Telephone No.:

H. Holder shall meet all the requirements contained in Suggested Practices for Raptor Protection on Power Lines. Prior to construction, Holder shall provide the Authorized Officer with drawings which show phase spacings, configurations, and grounding practices for this power distribution line. Holder shall modify any structures not in conformance with Suggested Practices for Raptor Protection on Power Lines as determined by the Authorized Officer.

I. No clearing shall be allowed on the power line right-of-way.

J. In order to protect critical deer winter range, construction activities and surface disturbance will be allowed only during the period from May 15 to November 15. The critical area extends from the Highway 16 crossing in Utah to the Whitney Canyon Inlet facility. This limitation does not apply to maintenance and operation of this right-of-way. Any exceptions to this requirement must be authorized in writing by the Authorized Officer.

I. It shall be the responsibility of the Holder to comply with the construction practices and mitigating measures established by 33 CFR 323.4 which set forth the parameters of the "nationwide permit" required by Section 404 of the Federal Water Pollution Control Act. If the proposed action exceeds the parameters of the nationwide permit, the Holder shall obtain an "individual permit" from the appropriate office of the Corps of Engineers and provide BLM a copy of that permit prior to commencing actual construction. Failure to comply with this requirement shall be cause for revocation of this right-of-way grant.

J. The Holder will provide an archaeologist, approved by BLM,. to monitor surface disturbing activities at the following locations:

T. 17 N., R. 120 W., Section 18 to Section 16

K. Holder shall obtain an access permit from the Wyoming Highway Commission for all borings on U.S. Highway I-80, and from the Utah Highway Commission for all borings of Highway 16, prior to commencing any construction activity associated with the grant.

L. All block valves at highway crossings will be protected from potential vehicular contact or collisions by permanent placement of barricades or barriers and shall be located at least 100 feet outward from the edge of the travelled roadway.

M. Holder shall paint all permanent structures (on site for a period longer than 90 days after construction) a flat, noncontrasting color harmonious with the adjacent

landscape. Exceptions to this requirement are small structures which are not readily visible from a distance of approximately one quarter of a mile, such as wire and small pipe or structures which, because of OSHA requirements, require safety coloration. Specific colors appropriate for the various landscapes are identified below:

Sand Beige (5Y 6/3 - Munsell Soil Color Chart)

N. Reclamation of the right-of-way shall be accomplished as described in the construction and operation plan with the seed mixture conforming to that identified in the Cave Creek Sour Gas Gathering System Final Environmental Assessment on page I-43. Exceptions being that BLM land south of the Highway 16 crossing will be seeded with the same seed mixture as required on Dessert Land & Livestock property.

O. Prior to abandonment of the grant, the Holder shall contact the Authorized Officer to arrange a joint inspection of the grant area. The inspection will be held to agree on an acceptable abandonment and rehabilitation plan. The Authorized Officer must approve the plan in writing prior to the Holder commencing any abandonment and rehabilitation activities.

APPENDIX N.

Project Area Wildlife Maps and Current Rich and Summit County Wildlife Information

BEAR RIVER RESOURCE AREA
WILDLIFE INFORMATION

The following information is excerpted from the affected environment section of the Draft Bear River East Oil and Gas Environmental Assessment being prepared by the BLM. It is included in this Project Update to supplement and update wildlife information contained in the 1984 Cave Creek Sour Gas Gathering System Environmental Assessment for the portion of the project study area in Utah. The Bear River East Oil and Gas EA study area encompasses a larger area than that subject to the Cave Creek EA analysis in 1984. However, the information is applicable to wildlife and habitat found within and adjacent to the Wahsatch Gathering System (reference accompanying maps for important use areas for high interest species). Supplemental wildlife information is included here for areas in Rich and Summit Counties, Utah because of changes in wildlife use, delineation of additional important wildlife use areas, and the availability of more information since 1984. In Uinta County, Wyoming, the only major change in important wildlife use areas since the 1984 EA maps were compiled is expansion of the crucial mule deer winter range. As used in the following text, "EA" refers to the Bear River East Oil and Gas EA.

The area encompassed within the EA is inhabited by several big game species which include the mule deer, elk, pronghorn, and moose. These species can be found throughout the year on public lands and crucial habitat for each species is also present.

Mule deer spend the summer months at the higher elevations in the aspen, conifer, and mountain shrub vegetative zones. During the winter, the deer migrate into lower areas which are dominated by pinion, juniper, and sagebrush. During this time, depredation to farmlands often occurs as natural forage becomes less available. Within the normal winter range utilized by the deer there are traditional heavy use areas which are referred to as crucial deer winter range. These areas usually have a good mixture of forage plants such as sagebrush and bitter brush and also suitable cover in proximity to the forage in the form of dense pinion or juniper stands. Lack of suitable crucial deer winter ranges are often the limiting factor in the deer populations within the area. These crucial deer winter ranges are used from December 1 through April 15.

Elk inhabit similar areas as those described for mule deer and also make similar season movements to and from summer and winter use areas. Forage species for elk consist of grasses such as mountain brome and blue bunch wheat grass as well as some browse species such as mahogany, bitter brush, and cliffrose. The browse species are utilized to a greater extent in the winter when snows cover many of the grasses. Elk inhabit crucial winter ranges from December 1 through April 15.

Pronghorn are found in vegetative zones dominated by sagebrush throughout the year. Many times these areas are also normal or crucial winter range for deer and elk. Pronghorn feed on grasses and forbs such as blue bunch wheat grass and globe mallow in the spring and early summer and then shift to browse species in the fall and winter. The principle browse species utilized is sagebrush. Pronghorn inhabit the crucial pronghorn winter range during the period of December 1 through April 15.

Moose inhabit the higher elevations of the EA area in the conifer, aspen, and mountain shrub vegetation types and in summer are quite dependent on riparian zones located in many of the upper elevation drainages of the area. Moose are not as greatly impacted by heavy snow accumulations and do not make as significant seasonal movements as do deer and elk. Moose do move into the lower elevations of the aspen and mountain brush zones in the winter and forage on service berry, willow, and quaking aspen. Crucial moose winter range occurs where the forage species mentioned are found in close proximity to dense quaking aspen stands used for cover and use these areas from December 1 through April 15.

The area encompassed by the EA is also inhabited with upland game species such as the sage grouse, blue grouse, ruffed grouse, chukker and mourning dove. Of these species, the sage grouse is the most sensitive to human disturbance and has the greatest potential to be impacted from habitat loss associated with oil and gas related activities.

Sage grouse are dependent upon sagebrush to provide both forage and cover throughout the year. During winter as much as 98% of the diet of sage grouse consists of sagebrush. This is reduced to around 60% in the spring and summer when insects and forbs are also utilized. Sagebrush is also critical for cover throughout the year and especially during the nesting season.

There are three habitat types which are crucial for sage grouse and these are crucial strutting grounds, nesting areas, and winter range. Strutting grounds or leks are traditional locations where sage grouse congregate in the spring to mate. The most active period for this ritual and when the most grouse are at the leks is in early April. Males will often attend the lek from evening through a few hours after sunrise while the hens are more sporadic and come and go throughout this period. The early morning is the most active time of day for strutting and shortly after dawn, the grouse move off the lek into nearby sagebrush areas to forage and roost. The actual lek site is usually an area where vegetation is quite sparse but where more dense sagebrush escape cover is in close proximity to the site.

Other areas at greater distances do occur and have been mapped. Review of the literature and study results from the area indicate that crucial nesting habitat is usually found within a two mile radius of the lek. Nesting begins in mid to late April and after approximately 30 days of incubation hatching takes place in late May and early June. Most nests are

located under sagebrush plants. Areas most preferred for nesting are in sagebrush where the plants are between 20 and 25 inches in height. Sage grouse will however also make use of other plant species for nesting such as greasewood.

Crucial winter range for sage grouse is located in a variety of sagebrush types and is directly related to the severity of the winter and the snow depth at the time. When available black sage is often selected being a fairly short species of sagebrush it is covered by snow through much of the winter. Wyoming sagebrush is the most dominant species in the EA area and makes up the majority of the forage used by the grouse. Crucial winter range for grouse at many times overlaps those areas already described as crucial winter range for deer, elk, and pronghorn. Sage grouse utilize these areas from December 1 through February 28.

Predatory mammals which inhabit the EA areas include species such as black bear, mountain lion, bobcat, coyote, badger, and the weasel. These species use a variety of habitat types and many of the species mentioned have home ranges which include quite extensive areas.

Predatory birds or raptors that can be found in the area are species such as the golden eagle, red-tailed hawk, Cooper's and sharp shinned hawks, as well as the great horned owl and burrowing owl. These species use a variety of special habitat features for nesting which include trees, rocks, ledges, and burrows in the ground. Another raptor, the rough-legged hawk, is a winter visitor to the area and is common in the lower elevations of the EA area.

The predators mentioned prey upon small mammals such as the white-tailed jackrabbit, white-tailed prairie dog, and the Uintah ground squirrel as well as many other species of small rodents.

The most common reptiles which inhabit the area are snakes such as the Great Basin rattlesnake, Great Basin gopher snake, and garter snake, and lizards such as the sagebrush lizard and sideblotch lizard.

Amphibians include the tiger salamander, chorus frog and wood house toad.

Many of the streams and reservoirs which are scattered throughout the EA area are inhabited by fish species including the rainbow trout, brown trout, cutthroat trout, and brook trout. Habitat requirements for these species include cold, clear, well oxygenated streams with dense overhanging vegetation. The fish feed upon both aquatic insects as well as terrestrial insects which may fall into the water. Spawning sites should exhibit adequate gravel beds for egg deposition, later eddies for fry emergence, protection, and feeding.

Waterfowl frequent most of the riparian habitats within the area whether they be lakes,

reservoirs, rivers, streams, beaver ponds, or manmade livestock watering ponds. Common species include the Canada goose and a variety of ducks such as the mallard, cinnamon teal, pintail, redhead, and the common coot. Streams become important to waterfowl in late winter as these areas are the only waters without ice and provide resting and feeding opportunities for the ducks. Shorebirds such as the killdeer, and black-necked stilt, willet, spotted sandpiper also use these riparian areas and both waterfowl and shorebirds utilize the riparian zones for feeding and nesting.

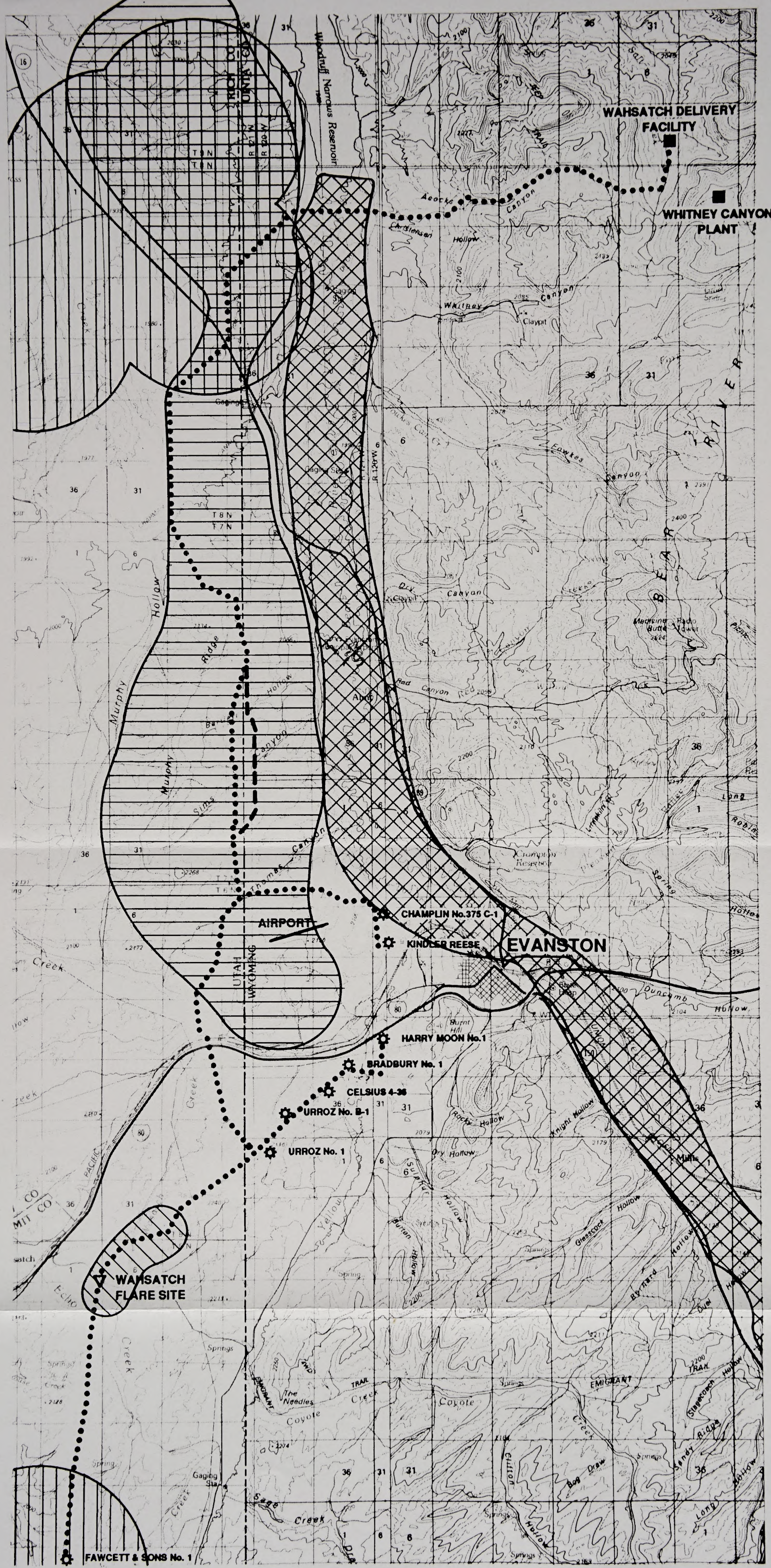
Threatened and endangered wildlife species in the area include the bald eagle, peregrine falcon, and the whooping crane, all listed as endangered. The bald eagle is a winter resident through much of the area and is present between mid October and Mid April. The bald eagles feed upon the carcasses of winter killed big game animals and forage in similar areas as those described as crucial winter ranges for deer, elk, and pronghorn. At nights and during the day after feeding, bald eagles generally roost in either dense stands of Douglas fir on north facing slopes or in stands of cottonwood trees found in valley bottoms along streams and rivers.

The peregrine falcon is believed to migrate through much of the area encompassed by the EA in the fall and spring. Peregrines do inhabit much of the Wasatch Front and could possibly be nesting on public lands considered in this EA in the rugged cliff areas to the east of urban areas stretching from Provo to Brigham City.

The Whooping crane has been observed in Rich County in small numbers during migration since 1983. The cranes have also been observed in Summit County near Coalville. The whooping cranes utilize agricultural lands and riparian areas for feeding and resting.

Another species which is proposed for listing as threatened or endangered is the ferruginous hawk which is a category 2 species.

Unconfirmed sightings of the black-footed ferret have been reported in the extreme northeast portion of the EA area and there is a remote chance that this endangered species could also exist.



WAHSATCH SOUR GAS GATHERING SYSTEM

SAGE GROUSE BREEDING COMPLEX
(Within 2 miles of strutting ground)

SAGE GROUSE CRUCIAL WINTER HABITAT

SANDHILL CRANE USE AREA

WATERFOWL USE AREA

1992 SOUR GAS PIPELINE

1984 ALIGNMENT

Union Pacific Resources

SUMMIT & RICH CO., UTAH
UINTA CO., WYOMING

Sage Grouse, Waterfowl & Sandhill Crane Habitats

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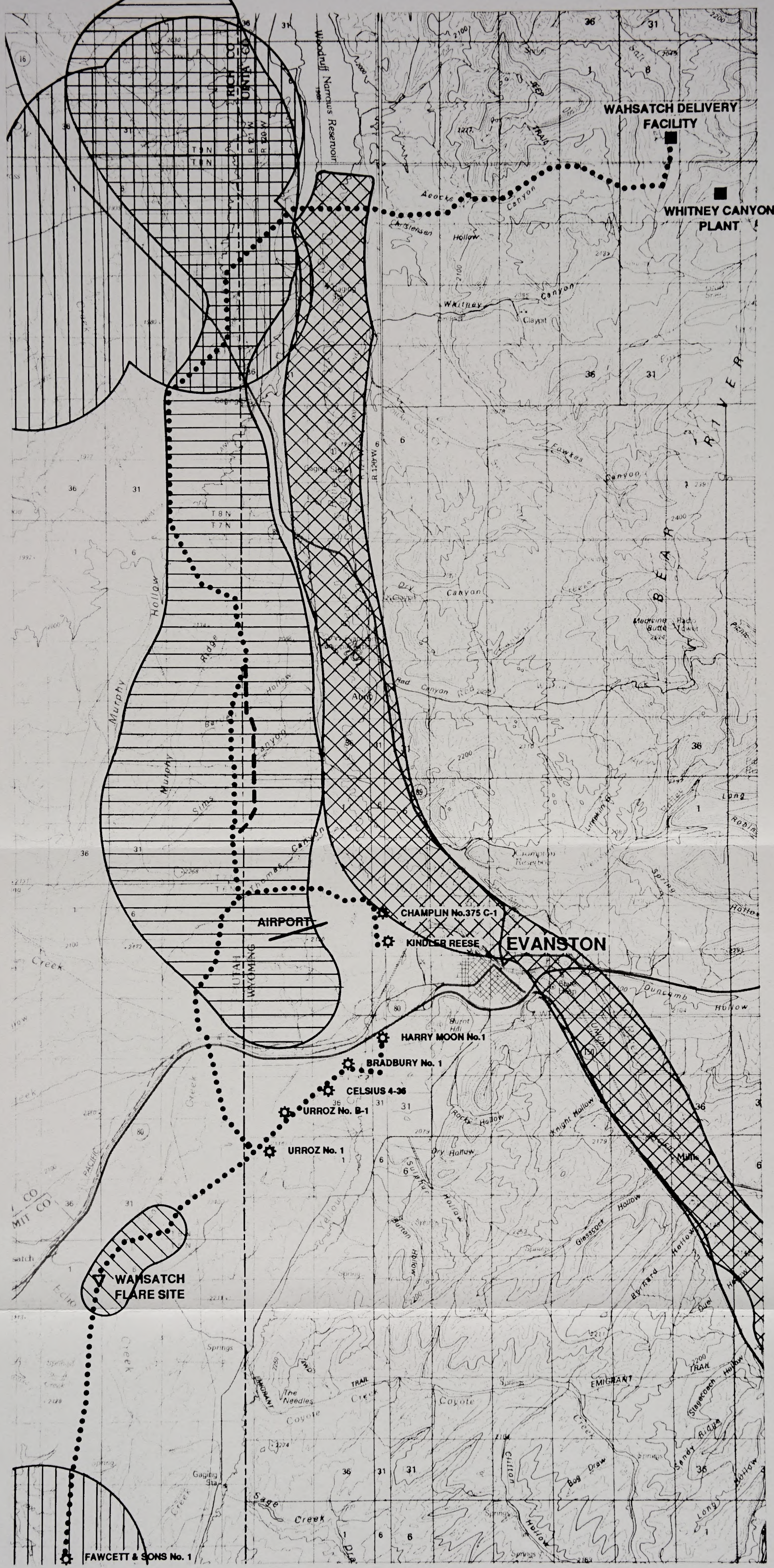

WAHSATCH SOUR GAS GATHERING SYSTEM

SAGE GROUSE BREEDING COMPLEX
(Within 2 miles of strutting ground)

SAGE GROUSE CRUCIAL WINTER HABITAT

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Sage Grouse, Waterfowl & Sandhill Crane Habitats

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